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MITSUBISHI CS-31203 SERVICE MANUAL

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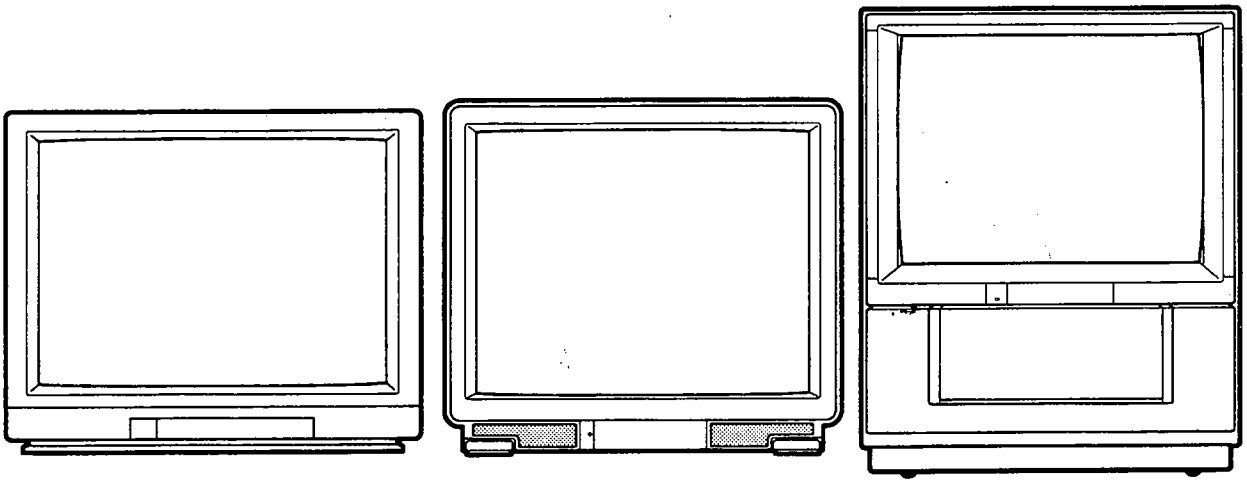
1994

MITSUBISHI

Service Manual

COLOR TV
JU-0 CHASSIS



MODEL
CS-31203, CS-31203C
CS-31303, CS-31303C

MODEL
CS-35303

MODEL
CK-35304

CAUTION

Before servicing this chassis, it is important that the serviceman reads the "SAFETY PRECAUTIONS" and "PRODUCT SAFETY NOTICE" in this service manual.

SPECIFICATIONS

- **Power Input** : AC 120V ; 60Hz
- **Power Consumption** : 175W [CS-31203, CS-31203C]
  180W [CS-31303, CS-31303C]
  195W [CS-35303, CK-35304]
- **Reception Frequency** : VHF 54~470MHz
  UHF 470~806MHz
- **Speaker** : 2"×3.5", 2pcs. [CS-31203, CS-31203C] [CS-31303, CS-31303C]
  3.9" Round type, 2pcs.
  1.6"×3.1"Oval type, 2pcs. [CS-35303]
  3.9" Round type, 2pcs. [CK-35304]
- **Picture tube** : M78JUA060×11 110° Deflection [CS-31203, CS-31203C] [CS-31303, CS-31303C]
  A89KPP50×03 110° Deflection [CS-35303]
  M89KZP411× 110° Deflection [CK-35304]
- **Picture high voltage** : 30.0kv (at 1mA) [CS-31203, CS-31203C] [CS-31303, CS-31303C]
  29.0kv (at 1mA) [CS-35303]
  32.0kv (at 1mA) [CK-35304]
- **Cabinet Dimensions** : 30.7" (W)×26.4" (H)×21.8" (D) [CS-31203, CS-31203C] [CS-31303, CS-31303C]
  29.4" (W)×34.5" (H)×24.0" (D) [CS-35303]
  36.5" (W)×44.1" (H)×24.2" (D) [CK-35304]
- **Weight** : 129.8lbs [CS-31203, CS-31203C] [CS-31303, CS-31303C]
  168.2lbs [CS-35303]
  243.7lbs [CK-35304]

- Weight and dimensions shown are approximate.
- Design and specifications are subject to change without notice.

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SAFETY PRECAUTIONS

NOTICE : Observe all cautions and safety related notes located inside the receiver cabinet and on the receiver chassis.

WARNING

1. Operation of this receiver outside the cabinet or with the cover removed presents a shock hazard from the receiver power supplies. Work on the receiver should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high-voltage equipment.
2. Do not install, remove or handle the picture tube in any manner unless shatter-proof goggles are worn. People not so equipped should be kept away while the picture tube is being handled. Keep the picture tube away from the body while handling.
3. When service is required, observe the original lear dress. Extra precaution should be given to assure correct lead dress in the high voltage area. Where a short-circuit has occurred, replace those components that indicate evidence of overheating.

X-RADIATION WARNING

The surface of the cathode ray tube may generate X-Radiation. Take precautions when servicing and, if possible, the use of a lead apron is recommended for shielding while handling.
When replacing the cathode ray tube, use only the designated replacement part since it is a critical component with regard to X-Radiation as noted on page 2. (No high-voltage adjustments are provided.) The high-voltage specifcation is described on the cover page.

LEAKAGE CURRENT CHECK

Before returning the receiver to the customer, it is recommended that leakage current be measured according to the following methods.

1. Cold Check
With the AC plug removed from the AC source, place a jumper across the two AC plug prongs. Turn the receiver AC switch on. Using an ohm-meter, connect one lead to the AC plug and touch the other lead to each exposed metal part (antennas, handle bracket, metal cabinet, screwheads, metal overlays, control shafts, etc.), particularly any exposed metal part having a return path to the chassis. Exposed metal parts having a return path to the chassis should have a minimum resistance reading of 1 meg ohm. Any resistance below this value indicates an abnormality which requires corrective action. Exposed metal parts not having a return path to the chassis will indicate an open circuit.

2. Hot Check
Use the circuit in Fig. 1 to perform this test.
(1) With switch S1 open, connect the receiver to the measuring circuit. Immediately after connection, measure the leakage current using both positions of switch S2, and with the switching devices in the receiver in all of their operating positions.
(2) Switch S1 is then closed, energizing the receiver. Immediately after closing the switch, measure the leakage current using both positions of switch S2, and with the switching devices in the receiver in all of their operating positions. Current measurements of items (1) and (2) are to be repeated after the receiver has reached thermal stabilization.The leakage current shall not be more than 0.5 miliampere.

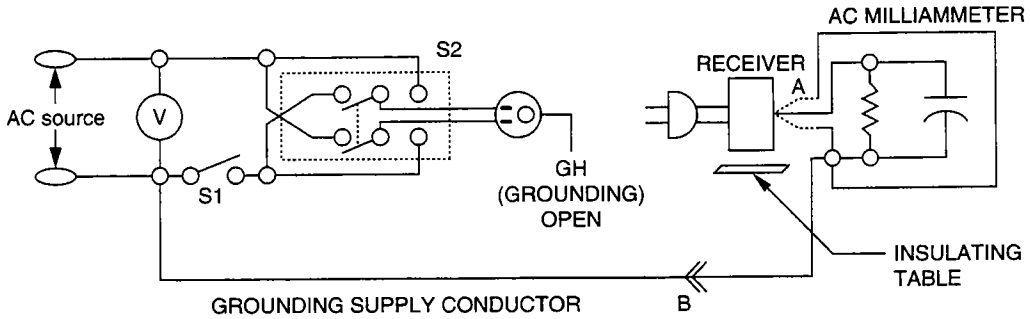


Fig. 1

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in television receivers have special safety related characteristics.
These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc.
Replacement parts which have special safety characteristics are identified in this service manual.
Electrical components having such features are identified by shading on the schematic diagram and the parts list of this service manual, and by marking on the supplementary sheet for this chassis to be issued sub sequently.
Therefore replacements for any safety party parts should be identical in value and characteristics.

DISASSEMBLY

Removal of Back Cover or Back Board

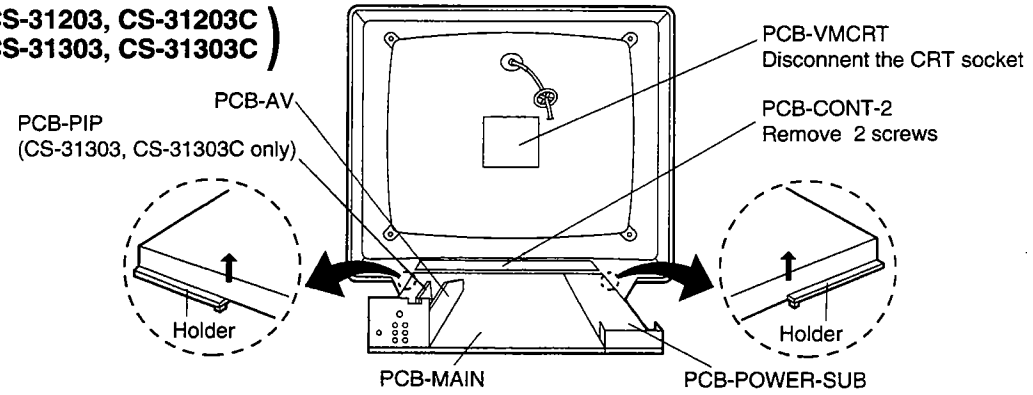
1. Remove 4 screws retaining the rear terminal panel to the back cover.
2. Remove 11 screws retaining the back cover to the front cabinet. (for CS-31203, CS-31203C, CS-31303, CS-31303C, CS-35303). Remove 9 screws retaining the back board to the cabinet. (for CK-35304)

Removal of PCB'S

1. Pull out the chassis assembly while lifting the rear of the chassis slightly and release the holders.
   (for CS-31203, CS-31203C, CS-31303, CS-31303C, refer to Fig. 2-1)
   (for CS-35303 refer to Fig. 2-2) (for CK-35304 refer to Fig. 2-3)

Note : When servicing PCB-PIP and PCB-AV, use extension cords for easier access. (Part No. 859C431O20)
(for CS-31303, CS-31303C, CS-35303, CK-35304)

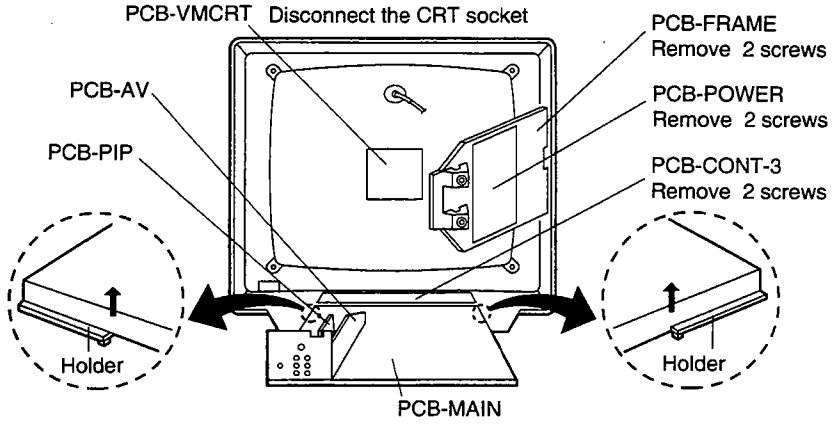
(for CS-31203, CS-31203C CS-31303, CS-31303C)



Chassis assmbly including PCB-MAIN, PCB-AV, PCB-CONT-2, PCB-POWER-SUB and PCB-PIP (CS-31303, CS-31303C only)

Fig. 2-1

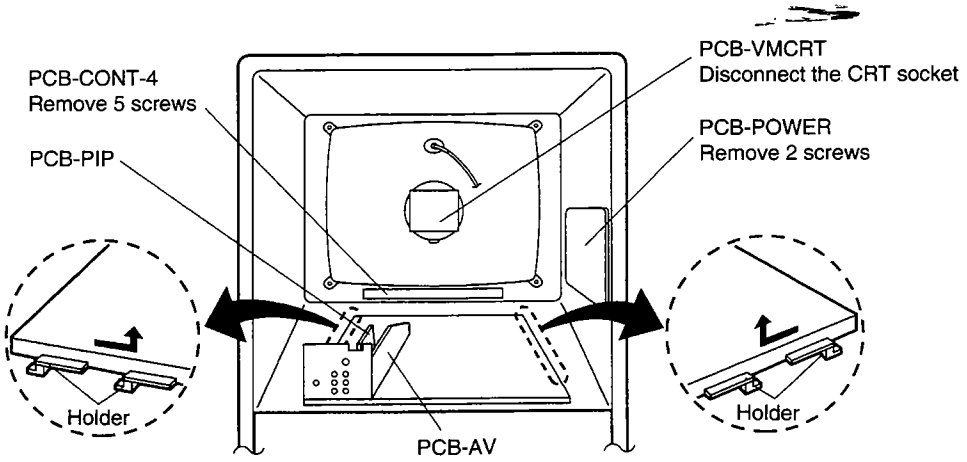
(for CS-35303)



Chassis assmbly including PCB-MAIN, PCB-AV and PCB-CONT-3, and PCB-PIP

Fig. 2-2

(CK-35304)



Chassis assmbly including PCB-MAIN, PCB-AV and PCB-PIP

Fig. 2-3

Main chassis servicing position

To service the bottom of a main chassis, refer to Fig. 3-1.

1. Cut stays off on the bottom of the main chassis, refer to Fig. 3-1
2. Insert the stays into the mounting positions as shown in the Fig. 3-2.

   [Caution] To prevent mechanical vibration, DO NOT leave the stays in the cabinet.

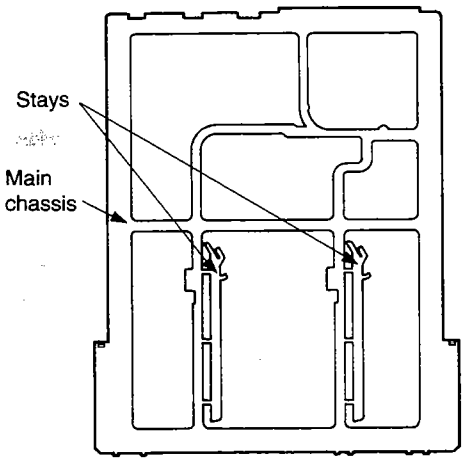


Fig. 3-1

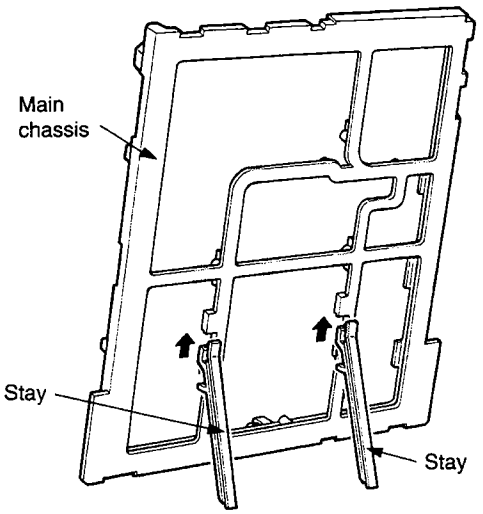


Fig. 3-2

LEAD DRESS

The lead wires to be clamped are listed in the table below.

NOTE : The inner wires are clamped so that they do not come close to heat generating or high voltage parts. After servicing route all wires in their original position.

* The anode lead wire is routed so that no tensile strength is applied to the cap. If the route of the anode lead wire is changed, return it to the initial route shown below.

[for CS-31303, CS-31303C, CS-31203, CS-31203C]

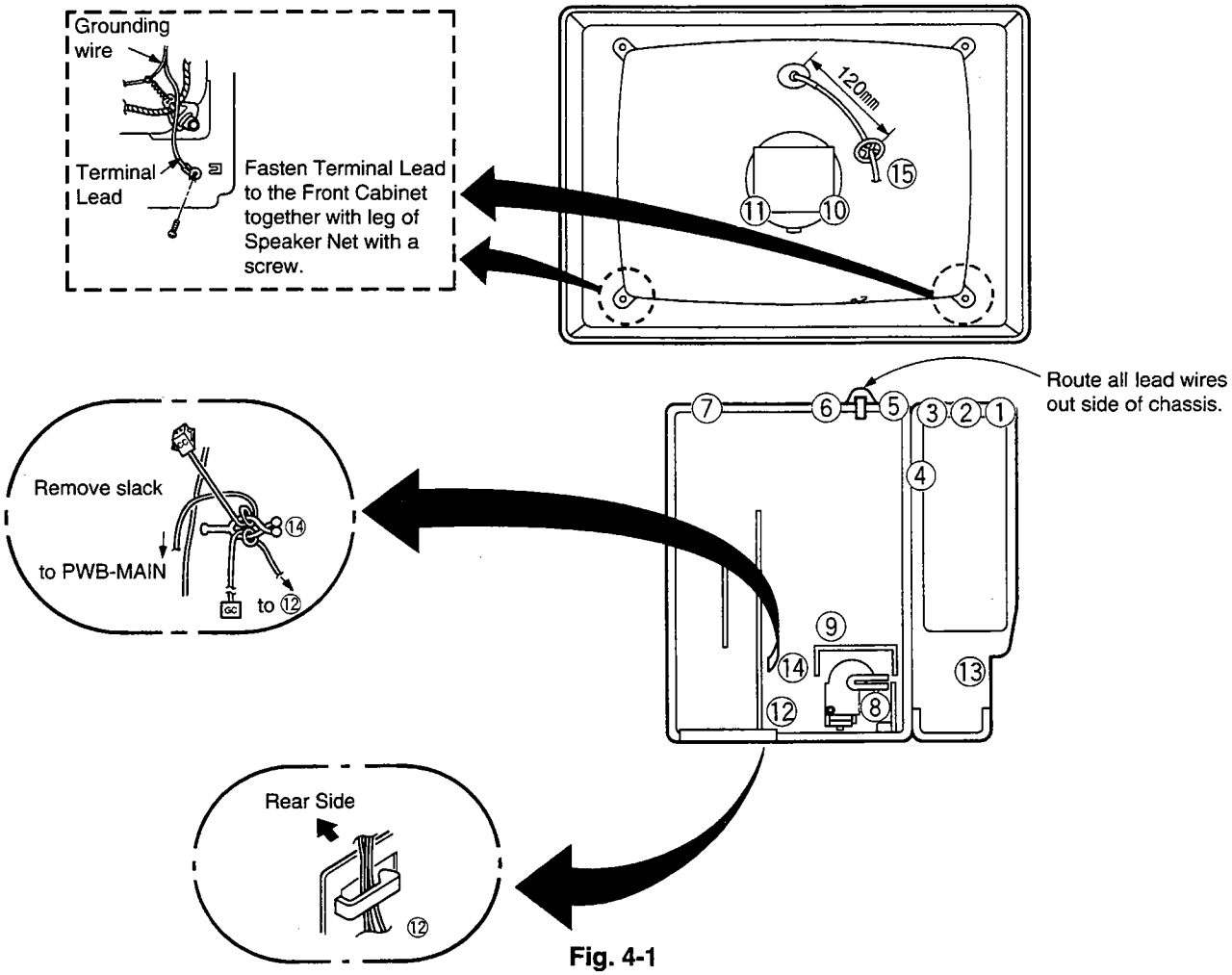


Fig. 4-1

LEAD WIRE	CLAMP
ANODE LEAD WIRE	⑮
DY–LEAD WIRE	⑨
FOCUS LEAD WIRE	⑧
SCREEN LEAD WIRE	⑧
SP391	⑦-⑥-⑤-③-②-①
SP392	⑥
CC	⑭(1 LOOP)
DP	⑬
GA	⑫-⑭(1 LOOP)-⑪

LEAD WIRE	CLAMP
GC	⑫-⑭-⑪
GD	⑫-⑭-⑪
GP	⑫-⑩
KB	④
MY	⑩
PC	①
SK	⑩
SP	⑦

Table 1-1

The lead wires to be clamped are listed in the table below.

NOTE : The inner wires are clamped so that they do not come close to heat generating or high voltage parts. After servicing route all wires in their original position.

* The anode lead wire is routed so that no tensile strength is applied to the cap. If the route of the anode lead wire is changed, return it to the initial route shown below.
* Reverse printed characters indicates aerial clamp.
* Fix the lead wires to the clamps [27] and [28] with silicone gum.

[for CS-35303]

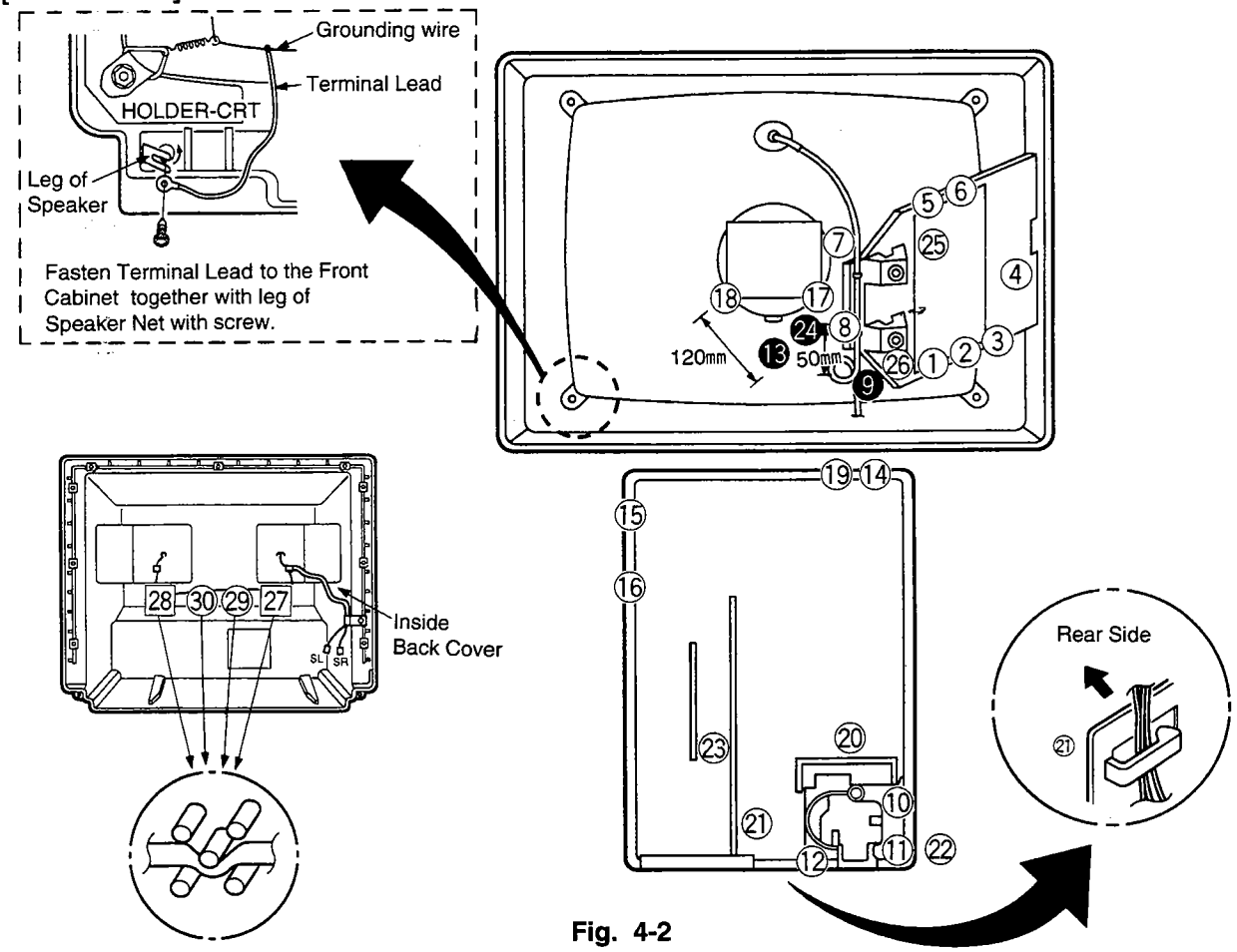


Fig. 4-2

LEAD WIRE	CLAMP
ANODE LEAD WIRE	❾(1 LOOP)⑧-⑦
DG–COIL	㉔
DY–LEAD WIRE	㉔
FOCUS LEAD WIRE	⑫-❸-⑰
SCREEN LEAD WIRE	⑫-❸-⑰
SP391	⑮-⑲-⑭
SP392	⑮-⑯
CC	㉓(2 LOOP)
DC	⑤-⑥-㉕
DF	⑪-⑩-㉖
DP	③-㉒
DV	⑳-⑩-㉖
DY	⑳(2 LOOP)
GA	㉑-⑫-❸-⑱
GC	④-③-②-①-⑩-⑪-⑫-❸-⑱

LEAD WIRE	CLAMP
GD	㉑-⑫-❸-⑱
GG	⑪-⑫-❸-⑰
GP	㉑-⑫-❸-⑰
HP	㉖-⑩-⑪-⑫-❸-⑰
KA	⑭-①-②-③-④
KC	⑮-⑯
KD	㉑-⑫-⑪-⑩-①-②-③-④
KE	⑯-⑮-⑲-⑭-①-②-③-④
KG	⑳-⑩-㉖
MY	⑰
SK	⑰
SL	⑭-⑲-⑮-[27]-㉙-㉚-[28]
SP	⑮
SR	⑮

Table 1-2

The lead wires to be clamped are listed in the table below.

NOTE : The inner wires are clamped so that they do not come close to heat generating or high voltage parts. After servicing route all wires in their original position.

* The anode lead wire is routed so that no tensile strength is applied to the cap. If the route of the anode lead wire is changed, return it to the initial route shown below.
* Reverse printed characters indicates aerial clamp.

[for CK-35304]

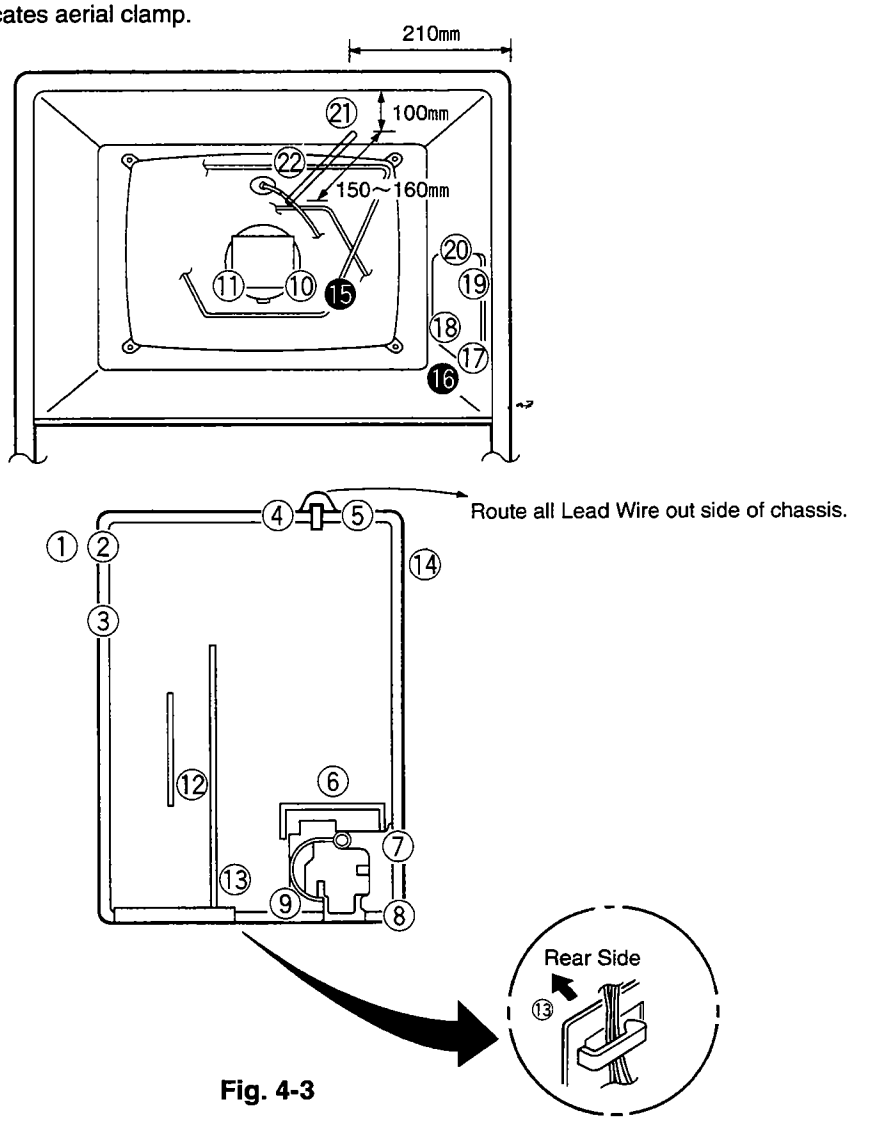


Fig. 4-3

LEAD WIRE	CLAMP
ANODE LEAD WIRE	㉑
DG–COIL	㉒
SCREEN LEAD WIRE	⑧-⑨-⑩
SP391	②-④-⑤
SP392	②-①(1 LOOP)
CC	⑫(1 LOOP)
DC	⑳-⓯
DF	⑦-⑧
DV	⑥-⑤-⑭-⑱
DY	⑥(1 LOOP)
F1	⑧-⑨-⑩
F2	⑧-⑨-⑩
GA	⑬-⑪

LEAD WIRE	CLAMP
GC	⑲-⑰-⓰-⑧-⑨-⑪
GD	⑬-⑪
GP	⑬-⑨-⑩
HP	⑱-⑭-⑦-⑧-⑨-⑩
KA	⑲-⑰-⓰-⑭-⑤
KC	①
KD	⑬-⑨-⑧-⓰-⑰
KE	③-②-④-⑤-⑭-⓰-⑰
KG	⑤-⑭-⑱
LA	②-①(1 LOOP)
MY	⑩
SK	⑩

Table 1-3

CRT REPLACEMENT

GENERAL

In some instances, after CRT replacement, Purity and Convergence may require adjustment. If it is required, follow the procedure described in the alignment section of this manual.

CAUTION : Safety goggles must be worn at all times when handling the CRT.

CAUTION : The CRT is extremely sensitive to mechanical shock, therefore care must be taken at all times when handing the CRT.

SUGGESTED TOOLS

The following tool is useful for replacement and final adjustment of the CRT, and are available through the National Parts Department.

1. T-TYPE BOX DRIVER # 859C358020 (Fig. 5)

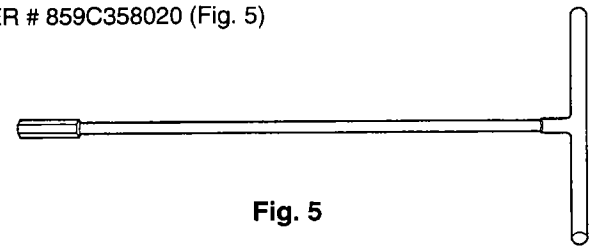


Fig. 5

CRT REPLACEMENT PROCEDURE [for CS-31203, CS-31203C, CS-31303, CS-31303C, CS-35303]

1. Remove the back cover as described under Removal of Back.
2. Carefully discharge the CRT to the ground on PCB-VMCRT.
3. Disconnect the anode connector from the CRT.
4. Remove the PCB-VMCRT and chassis Assembly (PCB-MAIN, PCB-AV, PCB-CONT-2, PCB-POWER-SUB and PCB-PIP) as described in the Removal of PCB's for CS-31203, CS-31203C, CS-31303, CS-31303C.
5. Remove the PCB-VMCRT, Power Frame and chassis Assembly (PCB-MAIN, PCB-AV, PCB-CONT-3 and PCB-PIP) as described in the Removal of PCB's. [for CS-35303]
6. Remove the screw retaining the terminal lead to the front cabinet as described in the LEAD DRESS.
7. Remove the degaussing coil. [for CS-35303 only].
8. Place a thick cushion or slab of foam rubber on the BASE and carefully lie the TV set on its face, taking care not to strike or scratch the face of the CRT. (Fig.6-1)
9. Remove 4 CRT mounting Hex nuts and washers. (Fig. 6-1)
10. Remove the CRT from the cabinet carefully. (Fig. 6-2, Fig. 6-3)
11. Remove the degaussing coil. [for CS-31203, CS-31203C, CS-31303, CS-31303C].
12. Remove the grounding wire.
13. To install the new CRT, reverse the above procedure.

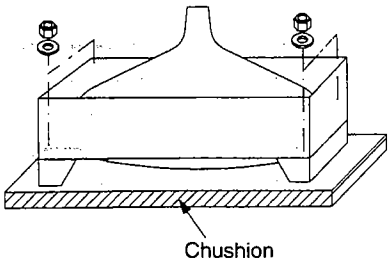


Fig. 6-1

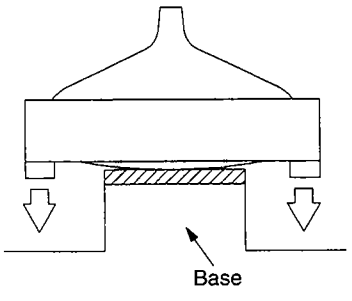


Fig. 6-2

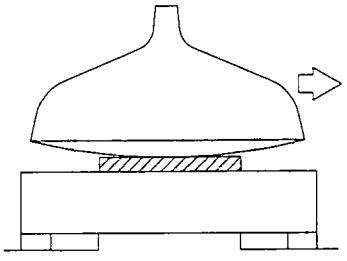


Fig. 6-3

CRT REPLACEMENT PROCEDURE [for CK-35304]

1. Remove the back cover as described under Removal of Back cover.
2. Carefully discharge the CRT to the ground on PCB-VMCRT.
3. Disconnect the anode connector from the CRT.
4. Remove the PCB-VMCRT, PCB-POWER and chassis assembly (PCB-MAIN, PCB-PIP,PCB-AV) as described in the Removal of PCB'S.
5. Remove the degaussing coil.
6. Place a thick cushion or slab of foam rubber on the BASE and carefully lie the TV set on its face, taking care not to strike or scratch the face of the CRT. (Fig. 7-1)
7. Remove 4 CRT mounting Hexnuts and washers (Fig. 7-1)
8. Remove the CRT from the cabinet carefully. (Fig. 7-2, Fig. 7-3)
9. Remove the grounding wire.
10. To install the new CRT, reverse the above procedure.

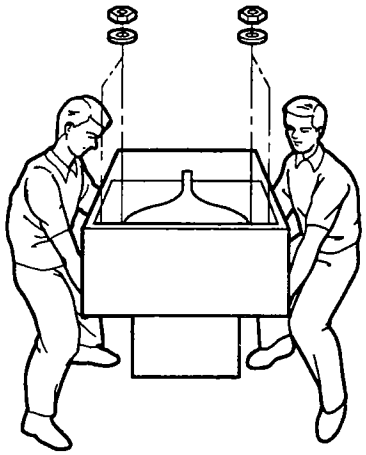


Fig. 7-1

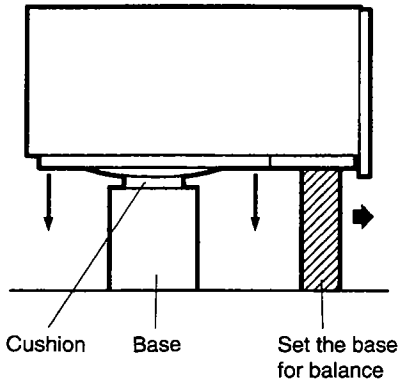


Fig. 7-2

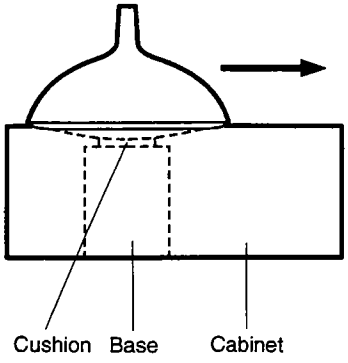


Fig. 7-3

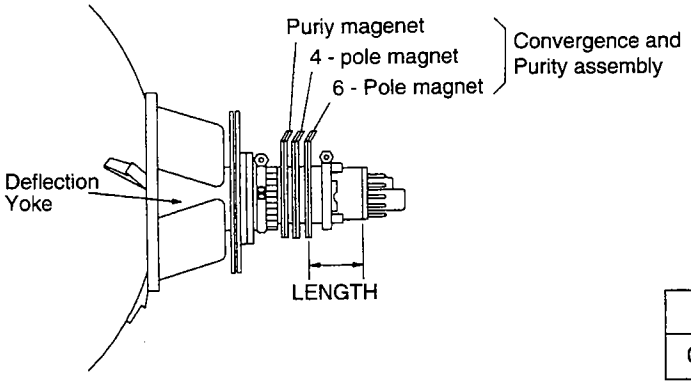
ITC ADJUSTMENT

Perform ITC ADJUSTMENT only for the model CK-35304.

Before adjusting the INTEGRATED TUBE COMPONENT, run the CRT for more than an hour with a monochrome signal applied, to provide normal beam current.

- ITC adjustments should be performed in the following sequence after replacing either the CRT, deflection yoke or purity and convergence magnetic assembly.
  When not replacing parts, perform only the necessary adjustments.
- Installation

a). Install the deflection yoke on the neck of the CRT, fully forward against cone.
b). Place the purity and convergence assembly on the neck of the CRT so that the distance between the 6-pole magnet and the base of the tube ia as indicated in Table. 1, then tighten the screw by hand.



MODEL	LENGTH
CK-35304	1.93±0.08 inches

Table. 1

Preliminary Adjustment

a). Degauss the front and rear of the CRT, CRT holder, and the front and sides of the cabinet. Don't allow the degaussing coil near to the deflection yoke, purity and convergence magnetic assembly.
(Insufficient degaussing can prevent suitable color purity adjustment.)
b). Run the CRT for more than an hour with a white raster signal, to provide normal beam current.
c). Make sure that all electrical adjustments have benn performed.
d). Align the 4-pole, 6-pole and purity magnets to minimum magnetic strength (tabs together).

1. Purity	**Adjustment purpose**	Insure the R, G and B beam hit the correct fluorescent materials.
	Symptom when incorrectly adjusted	Incorrect color in areas of the picture.

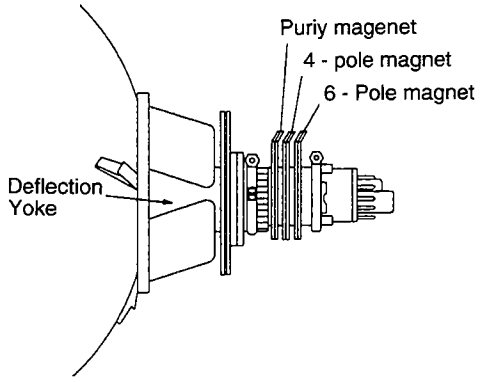
Input signal	VIDEO signal (yellow raster)
Input terminal	VIDEO IN terminal

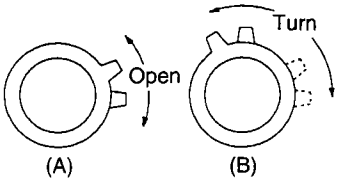
1. Supply a VIDEO signal (yellow raster).
2. With the deflection yoke positioned fully forward, adjust the purity magnet so that the yellow bar is at the center of the screen with normal vertical centering.
3. Slide the deflection yoke slowly backwards to produce a uniform yellow raster.
4. Tighten the deflection yoke in the position.
5. Switch the input signal from red to green to blue. Confirm no discoloration appears in each of the colors. If discoloration is present, re-adjust steps 1 through 4.

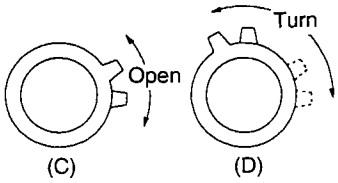
2. Static Convergence	**Adjustment purpose**	To correct any misconvergence in the center of the picture.
	Symptom when incorrectly adjusted	Color edging of objects in the main picture area.

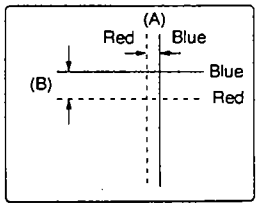
Input signal	VIDEO signal (crosshatch)
Input terminal	VIDEO IN terminal

1. Supply a VIDEO sicnal (crosshatch).
2. Set the BRIGHTNESS and CONTRAST controls to center position.
3. Adjust the angle between the tabs of the 4-pole magnet and the angular position to converge the "B" and "R" beams on the screen.
4. Adjust the angle between the tabs of the 6-pole magnet and the angular position to converge the "B" and "R" beams on the "G" beam at the center of the screen.
5. Make sure that purity in each color "R", "G" and "B" is maintained. If necessary, repeat item 1 (Purity) to item 2 (Static Convergence).

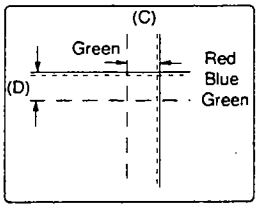








Adjustment by 4-pole magnet



Adjustment by 6-pole magnet

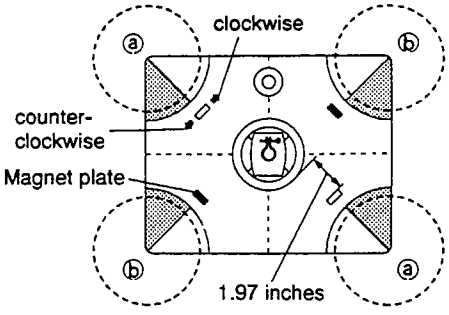
Note: With both 4-pole and 6-pole magnets, converge the vertical line with the angle between tabs and the horizontal line with angular rotation of both tabs together.

3. Screen corner landing compensation	**Adjustment purpose**	To correct divergence in the corners of the screen.
	Symptom when incorrectly adjusted	Color edging appears at the corners of a screen.

Input signal	VIDEO signal (red raster)
Input terminal	VIDEO IN terminal

* The adjustments described below are for correcting inward color beam divergence at the corners of the screen.
Reverse placement of the magnet for correcting outward divergence.

1. Degauss the unit with its own degauss system.
Do not use any degaussing coil other than the built-in degaussing.
2. Supply a VIDEO signal (red raster).
3. Make sure that only red appears at the corners of the screen.
If other color appers, attach a magnet (Up to 3 pieces at a position) on the funnel of the CRT so that the undesirable color disappears (Part No. of magnet: 461D033O20).



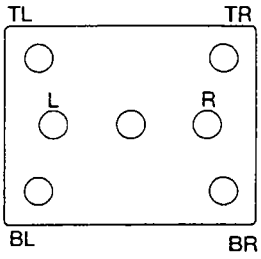
A). When an undesirable color appears in the area ⓐ, shown in the figure, set the face of magnet plate to white marker side and attach the magnet plate on the funnel of the CRT.

B). When an undesirable color appears in the area ⓑ, shown in the figure, set the magnet plate to the opposite side of white marker, and attach the magnet plate on the funnel of the CRT.

Note: The magnet plate will distort raster and disturb the convergence system. Do not place a magnet plate closer than 1.97 inches to the bobbin of the deflection yoke.

4. If an undesirable color appears in the area indicated by ▨, move the magnet plate counter-clockwise until the color disappears.
If an undesirable color appears in the area indicated by □, move the magnet plate clockwise until the color disappears.

To be continued the next page.



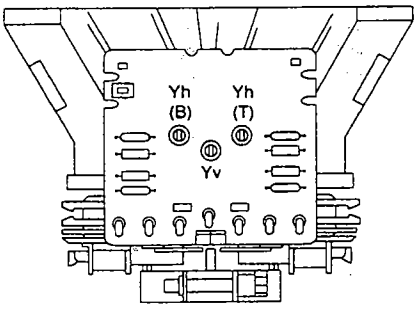
Check point for beam landing

Check Point	Best landing	Outward divergence	Inward diverence
R.TR.BR			
L.TL.BL			

5. After correction, degauss the set and then check corners of the screen.
   If discoloration exists, fine adjust the magnet for that corner.

4. Yh correct	**Adjustment purpose**	To correct the color divergence of R, G and B vertical lines at the top and bottom of the picture.
	Symptom when incorrectly adjusted	Color edging of vertical lines at the top and bottom of the picture.

Input signal	VIDEO signal (crosshatch)
Input terminal	VIDEO IN terminal

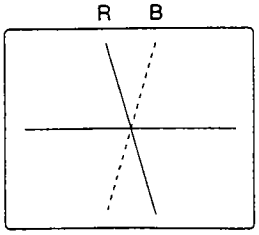
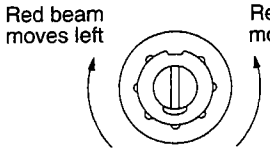


* Before adjusting, be sure to tighten the deflection yoke in position.

1. Supply a VIDEO signal (crosshatch).
2. When color beams do not converge along the Y axis as shown in the figure below, turn adjustment Yh (T), on the top of the deflection yoke counter-clockwise, and turn Yh (B) clockwise until the beams converge at the top and bottom.

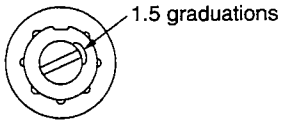
* Note that the potentiometer Yh (T) affects the beams at top of the screen while the Yh (B) at the bottom.
[Displacement amount: +1.8mm to -1.2mm]

* Reverse counter-clockwise and clockwise when the beam divergence is opposite to the example as shown below.

	Direction of divergence	Adjusting potentiometers, Yh (T) and Yh (B)
Yh		

To be continued the next page.

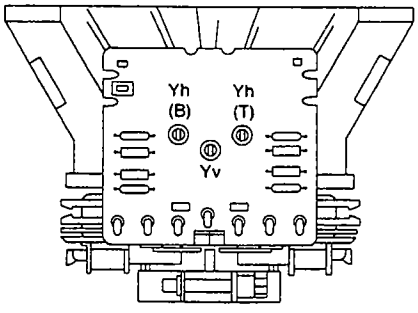
* At their full travel, the Yh potentiometers can move the beams approx. 4.0mm.
Do not turn them more than 1.5 graduation.

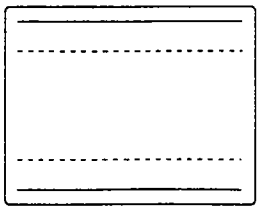
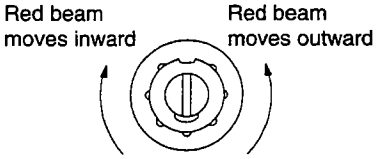


5. Yv correct	**Adjustment purpose**	To correct color divergence of R, G and B horizontal lines at the top and bottom of the picture.
	Symptom when incorrectly adjusted	Color edging around horizontal line at the top and bottom of the picture.

Input signal	VIDEO signal (crosshatch)
Input terminal	VIDEO IN terminal

* Before adjusting, be sure to tighten the deflection yoke in position.
1. Supply a VIDEO signal (crosshatch).
2. When horizontal lines do not converge at the top and bottom of the screen, turn the adjusting potentiometer, Yv, on the top of the deflection yoke, clockwise.
[Displacement amount: ±1.0mm]
Reverse clockwise as counter-clockwise when the beam divergence is opposite to the example as shown below.



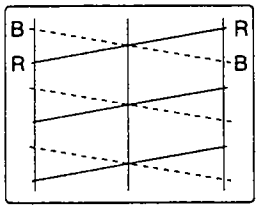
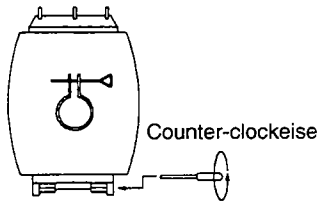
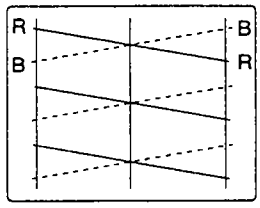
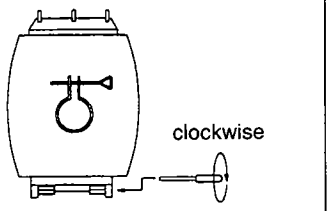
	Direction of divergence	Adjusting potentiometers
Yv		

6. Xv correct	**Adjustment purpose**	To correct color divergence of R, G and B horizontal lines at the sides of the picture.
	Symptom when incorrectly adjusted	Color edging around horizontal lines at the sides of the picture.

Input signal	VIDEO signal (crosshatch)
Input terminal	VIDEO IN terminal

* Before adjusting, be sure to tighten the deflection yoke in position.

1. Supply a VIDEO signal (crosshatch).
2. When horizontal lines do not converge at left and right sides of the screen, adjust vertical cross (Xv) with the horizontal differential coil as shown below.

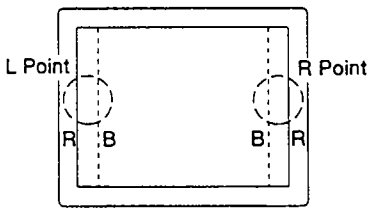
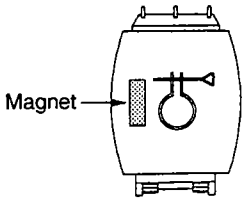
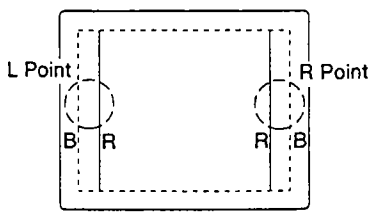
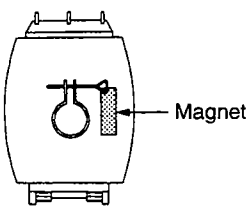
Type of Misconvergence	Core position
	
	

7. Xh correct	**Adjustment purpose**	To correct color divergence of R, G and B vertical lines at the sides of the picture.
	Symptom when incorrectly adjusted	Color edging at the sides of the picture.

Input signal	VIDEO signal (crosshatch)
Input terminal	VIDEO IN terminal

* Before adjusting, be sure to tighten the deflection yoke in position.

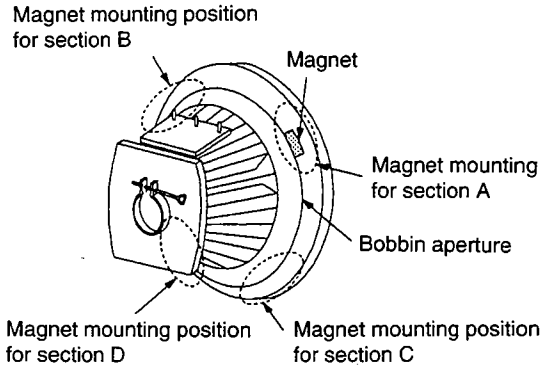
1. Supply a VIDEO signal (crosshatch).
2. When beam lines do not converge at left and right sides of the screen, adjust horizontal cross (Xh) with a magnet plate as shown below (Part No. of magnet: 412D064O10).

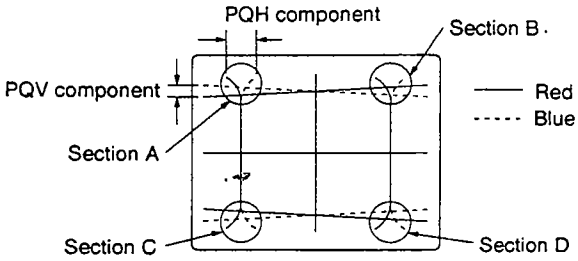
Type of Misconvergence	Stick a magnet to the position illustrated below
	
	

8. Convergence at screen corners	**Adjustment purpose**	To correct convergence at the corners of the picture.
	Symptom when incorrectly adjusted	Color edging in the corners.

Input signal	VIDEO signal (crosshatch)
Input terminal	VIDEO IN terminal

1. Supply a VIDEO signal (crosshatch).
2. If convergence is poor at corners, place a magnet at the aperture of the deflection yoke bobbin.
   The magnet mounting position correspondes with each respective corner as shown below (Part No. 461D017O10).
3. Position the magnet with adhesive so the PQH and PQV components are minimized.


Magnet mounting position for section B
Magnet
Magnet mounting position for section A
Bobbin aperture
Magnet mounting position for section D
Magnet mounting position for section C

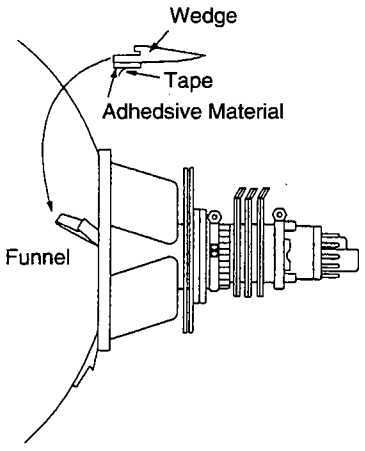


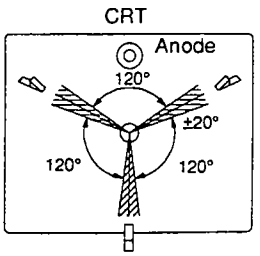
Pattern seen from face side of CRT

9. Wedge position	**Adjustment purpose**	Secure deflection yoke to the funnel of the CRT.
	Symptom when incorrectly adjusted	Convergence may vary.

Input signal	——
Input terminal	——

1. Insert 3 wedges so there is no yoke movement, as shown below.
2. After positioning the wedges, gently turn up the end of the wedge and strip the tape from the rear to expose the adhesive material, then adhere to the funnel of the CRT.
3. Apply silicone gum (Part No. 859D106O20) between wedges and the funnel of the CRT.





Note: Do not use a wedge that has already been used.

ELECTRICAL ADJUSTMENTS

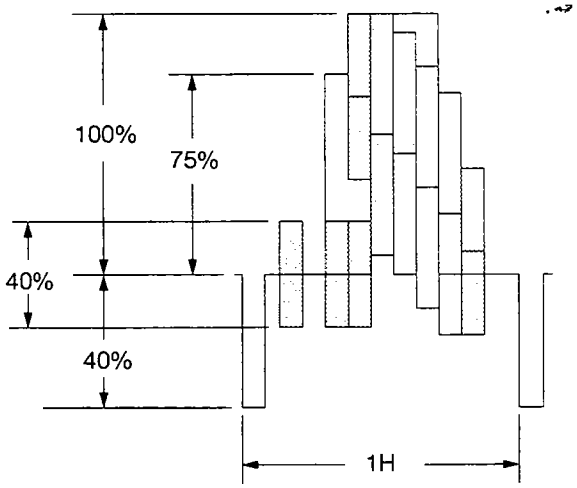
Perform only the adjustments required.
If proper equipment is not available, do not attempt an alignment.

◘ Measuring equipment and Jigs

- Oscilloscope (Unless otherwise specified, use 10:1 probes)
- Signal generator
- Frequency counter
- Multiplex audio signal generator
- Direct current milliammeter
- Electrical tools
- Cable extension kit (Part No. 859C431O20)

◘ TEST signal

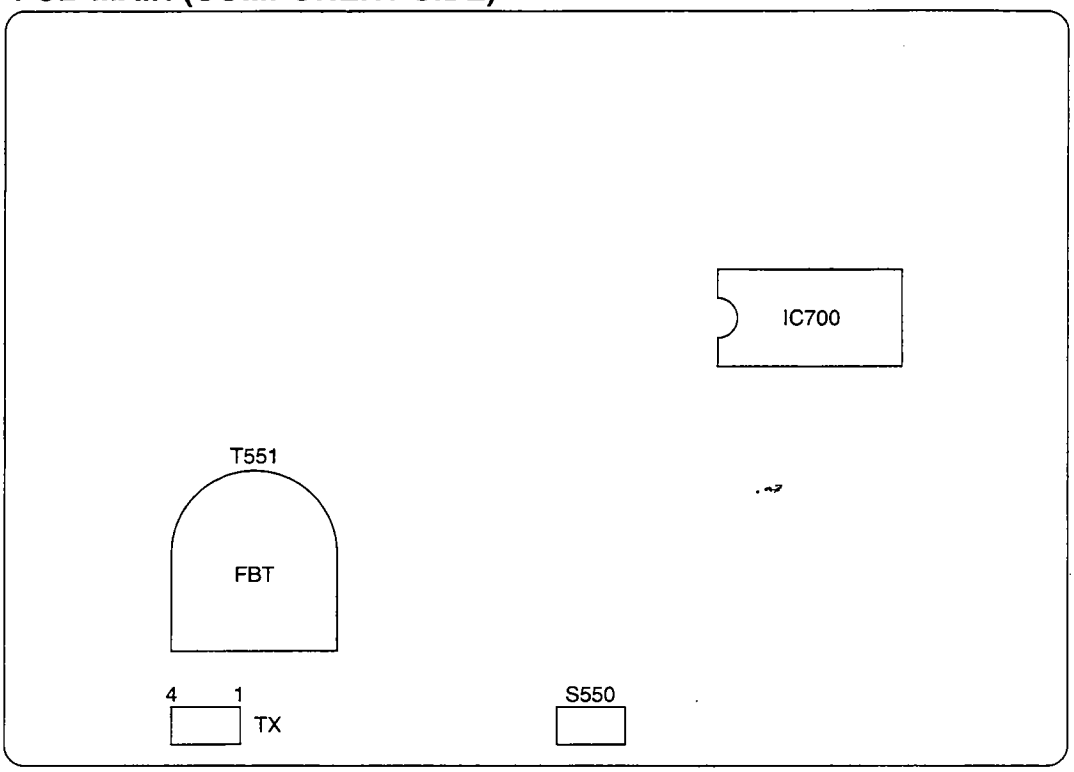
1) Monoscope signal
   When you have no monoscope signal source for adjustment, connect the unit to a VCR and play an alignment tape (Monoscope).
2) Color bar signal
   In this manual, unless othewise specified, use the color bar signal specified, below.



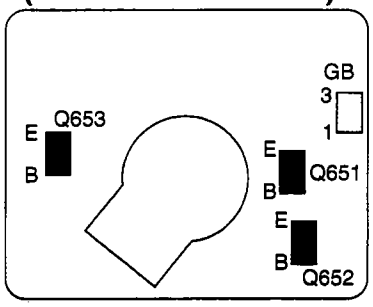
NTSC
Split-Field Color Bars (with 100% window)

Location of Test Points and Adjustments

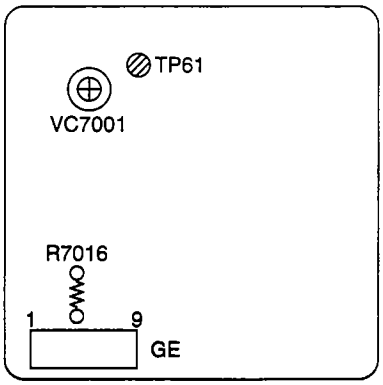
PCB-MAIN (COMPONENT SIDE)



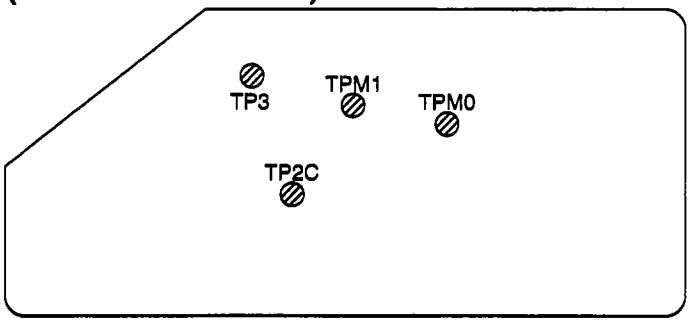
PCB-VMCRT (COMPONENT SIDE)



PCB-PIP (COMPONENT SIDE)



PCB-AV (COMPONENT SIDE)



Initial Set up

Follow the steps below for the initial set up.

1. Set the receiver to "TV mode".
2. Press the "MENU" button on a remote hand unit one time to select the "MENU" display.
3. Press the buttons "2", "3", "5", and "8" successively to select the "OPTION MENU" display.
4. Press the "ADJUST" button to select "Initial".
5. Press the "ENTER" button.

Note : At this time, channel 3 is selected.

6. Perform steps 2 and 3 above to display "OPTION MENU" screen.
7. Use the "ADJUST" button and "ENTER" button to set "OPTION MENU" as shown in the table below.
8. Press the "MENU" button twice to return to normal viewing.

OPTION MENU

Initial		System 1A	: On
E²RESET		CCD	: On
Hotel	: Off	Auto clock	: On
		Call letr	: On
PIP	: On	Net name	: On
		Prog name	: On
Montr. fix	: On	Prog descr	: On
Auto turn	: Off		
Antenna	: 2		
Input	: 2		

※ Set this condition to "OFF" for models CS-31203 and CS-31203C.

CAUTION : DO NOT select "E²RESET" and press "ENTER" button.
If pressed, all the data of E²PROM is changed to the initial data value, then readjustment of all the data relating to the E²PROM must be performed.

Initial Setting Condition

Initial Setting Item	Initial Setting Condition	Initial Setting Item	Initial Setting Condition
INPUT	TV	PIP SOURCE	TV
RECEIVE CHANNEL	003 CH	PIP POSITION	—
TV/CATV	CATV	VIDEO MUTE	OFF
Q. V.	003 CH	RENAME THE INPUTS	ALL LABEL CLEAR
CHANNEL MEMORY	ALL CH (0.0)	POWER RESTORE	OFF
Lock the TV	OFF	AUTO CLOCK	OFF
LOCK CODE	$FFFF_H$	A / V NETWORK	OFF
VOLUME	21_HStep / 64	SELECT LANGUAGE	English
AUDIO FUNCTIONS		ADVANCED PIP	TV Still
TV Listen to	STEREO	OPTION MENU	
TV Bass	50%	Initial	—
TV Treble	50%	E²reset	—
TV Balance	50%	Hotel	OFF
TV Surround	OFF	PIP	ON
TV Speaker	ON	Montr. fix	OFF
VIDEO FUNCTIONS		Auto turn	OFF
TV Tint	50%	Antenna	1
TV color	50%	Input	1
TV Contrast	50%	System 1A	OFF
TV Brightness	50%	CCD	ON
TV Sharpness	50%	Auto clock	ON
TV Color temp	High	Call letr	ON
TV CC	When muting	Net name	ON
		Prog name	ON
		Prog descr	ON

Circuit Adjustment Mode

On this model, the following adjusttment items may only be performed using the remote hand unit.

item 1 (SAP VCO) ~ item 18 (Sub cont), item 21 (Character position), item 23 (PIP chroma gain), item 24 (PIP Sub TINT)

To perform these adjustments, use the following procedure to activate the circuit adjustment mode.

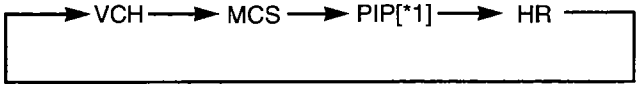
1. Activating the circuit adjustment mode

1. Press the "MENU" button on a remote hand unit. (The "MENU" display will appear.)
2. Press the buttons "2", "3", "5", and "7" in that order. (The screen will change to the circuit sdjustment mode.)
   If not changed to the circuit adjustment mode, repeat the steps 1 and 2 again.

2. Selection of adjustment functions and adjustment items

To select an adjustment item in the circuit adjustment mode, select first the adjustment function, that includes the specific adjustment item to be selected, and next select the adjustment item.
Refer to the following pages for the listing of adjustment functions and adjustment items.

1. Press the "AUDIO" button on a remote hand unit to select an adjustment function. Each time the button is pressed, the adjustment function changes in the following sequence.



*1 : "PIP" is not displayed for CS-31203 and CS-31203C.

2. Press the "VIDEO" button to select a specific adjustment item. The adjustment item number increases, each time the "VIDEO" button is pressed.

3. Changing data

After selecting an adjustment item, use the "ADJUST UP/DOWN" button to change adjustment data.

- If "ADJUST DOWN" button is pressed, the adjustment data decreases.
- If "ADJUST UP" button is pressed, the adjustment data increases.

4. Saving of adjustment data

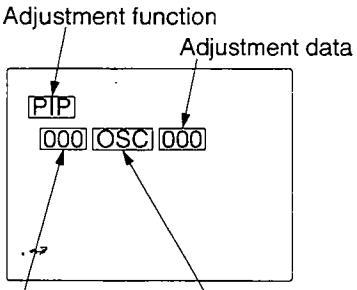
Press the "ENTER" button to save the adjustment data in memory. The display of characters goes red for approx. two seconds in this step.

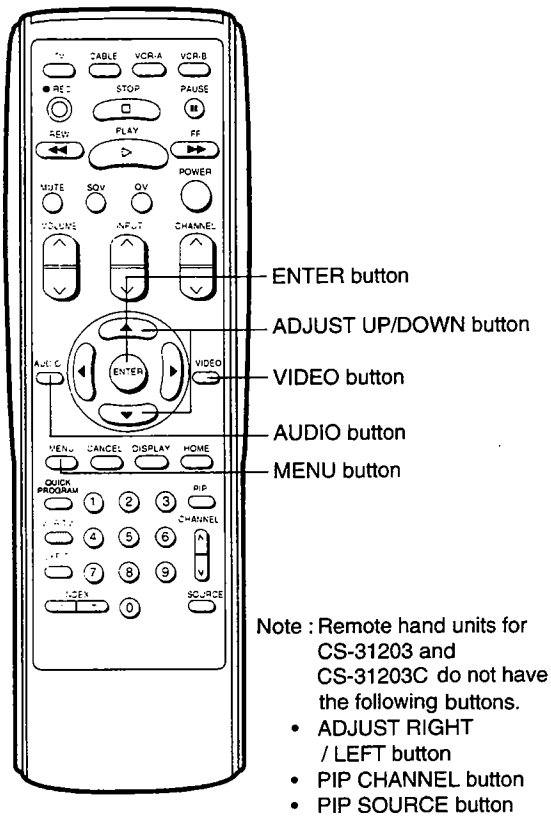
Note : If the circuit adjustment mode is terminated without pressing the "ENTER" button , changes in adjutment data are not saved.

5. Terminating the circuit adjustment mode

Press the "MENU" button on the remote hand unit twice to terminate the circuit adjustment mode.

Note : The circuit adjustment mode can be also terminated by turning the power OFF.





Note : Remote hand units for CS-31203 and CS-31203C do not have the following buttons.

- ADJUST RIGHT / LEFT button
- PIP CHANNEL button
- PIP SOURCE button
- INDEX button

List of Adjustment Functions and Adjustment Items

Note : The values with the description of "Fixed Value" in the NOTE column should not be changed.

Note : The "intial data" is the initial value of that adjustment. The initial data may not be correct for the normal performance of your specific TV set.

Note : The E²PROM stores the adjustment data, when replaced the micro computer will automatically write the initial data values in the new E²PROM. Initial data with an ★mark will differ from that given in the table.
After replacing E²PROM, or when selecting E²RESET in OPTION MENU, readjust the data with ★marks to the value listed below.

Note : When ICs for specific adjustment functions are replaced, the micro computers automatically writes the data value is stored in the E²PROM.

Function Display		VCH			IC201
Adjustment Item Number	Adjustment Abbreviated Name	Adjustment Name	Adjustment Range	Initial Data	Note
0	COL	Color Control	0~127	80	
1	TNT	TINT Control	0~127	50	
2	BRT	Brightness Control	0~255	135	
3	CNT	Contrast Control	0~127	70	
4	SHP	Sharphess Control	0~127	21	
5	CTR	R-CUT OFF	0~255	255	
6	CTG	G-CUT OFF	0~255	255	
7	CTB	B-CUT OFF	0~255	255	
8	DHR	R-Drive	0~127	63	
9	DHB	B-Drive	0~127	63	
10	VHT	Vertical Height	0~127	63	
11	PAM	E-W Parabora(PCC-Amp)	0~63	32	
12	HWD	Horizontal Width	0~63	32	
13	YDL	Y-Delay Line Selection	0~1	0	Fixed value
14	DL2	Aperture Control Delay Volume Selection	0~1	1	Fixed value
15	DCT	DC Transmission Volume Selection	0~1	1	Fixed value
17	AFC	AFC1 Gain Selection	0~3	★3	Fixed value
19	SVS	Service Switch	0~1	1	Fixed value
26	CRS	R-Cut Off Switch	0~3	1	Fixed value
28	DRR	R-Drive Switch	0~1	1	Fixed value
29	DRB	B-Drive Switch	0~1	1	Fixed value
30	CBS	B-Cut Off Switch	0~3	1	Fixed value
33	DL1	Preshoot/Overshoot	0~7	★0	Fixed value
34	PED	Black Expansion Gain	0~15	7	Fixed value
35	GMA	White γ Level	0~15	★15	Fixed value
36	GMG	White γ Gain	0~15	★15	Fixed value
37	BES	Black Expansion Slice Position	0~7	4	Fixed value
38	R-Y	Demodulation Axis R-Y	0~31	★16	Fixed value
39	B-Y	Demodulation Axis B-Y	0~63	★18	Fixed value
40	G-Y	G-Y Ratio Selection	0~3	1	Fixed value
41	WHC	White Character Correction	0~15	8	Fixed value
42	WHV	White Character Slice Position	0~15	8	Fixed value

Function Display		VCH			IC201
Adjustment Item Number	Adjustment Abbreviated Name	Adjustment Name	Adjustment Range	Initial Data	Note
43	HPH	H-Center Position	0~31	16	
44	VSC	Vertical S	0~63	32	
45	VLR	Vertical Lineality	0~63	32	
46	VSF	Vertical Position	0~2	1	
47	PPH	PCC Phase	0~63	32	
48	PC1	PCC Corner 1	0~7	4	
49	PC2	PCC Corner 2	0~7	4	
50	VCM	Vertical EHT	0~15	8	
51	HCM	Horizontal EHT	0~15	7	

Function Display		MCS			IC3A0
Adjustment Item Number	Adjustment Abbreviated Name	Adjustment Name	Adjustment Range	Initial Data	Note
0	PVC	SAP VCO	0~63	32	
1	TVC	Stereo VCO	0~63	32	
2	INP	Input Level	0~63	32	
3	FIL	Filter	0~63	63	
4	LSP	Low Sound Separation	0~63	32	
5	HSP	High Sound Separation	0~63	32	

Function Display		PIP			IC7002
Adjustment Item Number	Adjustment Abbreviated Name	Adjustment Name	Adjustment Range	Initial Data	Note
0	TINT	Tint	0~63	32	
1	COLR	Color Saturation	0~63	32	
2	DECD	Color Reset	0~1	0	Fixed value
3	SYNC	Sub Picture Sync Separation Threshold	0~7	★ 1	Fixed value
4	RVS	RVS	0~1	0	Fixed value
5	BG-Y	Back Ground Luminance Level	0~15	★10	Fixed value
6	BSTB	Burst with Background displayed	0~63	★10	Fixed value
7	MVW	Sub Picture Macro Vision	0~3	0	Fixed value
8	CRTN	Sub Picture Tint Offset	0~3	1	Fixed value
9	VXA	Sub Picture Vertical Position	91~255	110	Fixed value
10	HXAO	Sub Picture Horizontal Position	17~139	126	Fixed value
11	ADJ9	Delay Volume between Sub Picture and Frame (1/9)	0~15	7	Fixed value
12	YDL9	Sub Picture Y Delay Volume (1/9)	8~29	★14	Fixed value
13	HPX9	Writing System Horizontal Position (1/9)	0~255	54	Fixed value
14	VYA9	Sub Picture Height (1/9)	0~255	188	Fixed value
15	HYA9	Sub Picture Width (1/9)	6~255	60	Fixed value
16	ADJ6	Delay Volume between Sub Picture and Frame (1/16)	0~15	7	Fixed value
17	YDL6	Sub Picture Y Delay Volume (1/16)	8~29	14	Fixed value
18	HPX6	Writing System Horizontal Position (1/16)	0~255	104	Fixed value
19	VYA6	Sub Picture Height (1/16)	0~255	206	Fixed value
20	HYA6	Sub Picture Width (1/16)	6~255	46	Fixed value
21	VXAM	Sub Picture Vertical Position (Multi)	207~255	229	Fixed value
22	HXAM	Sub Picture Horizontal Position (Multi)	15~150	32	Fixed value
23	VXBM	Sub Picture Vertical Position (Multi)	200~239	238	Fixed value

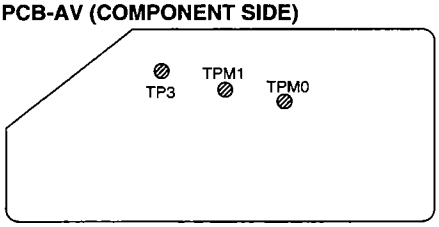
[Multi Channel Sound circuit] 1. SAP VCO	**Adjustment purpose**	Set the reference frequency for the SAP detection circuit.
	Symptom when incorrectly adjusted	No reception of SAP broadcasting.

Measuring instrument	Frequency counter
Test point	TP3
EXT trigger	– – –
Measurement range	– – –
Input signal	RF signal (monoral sound)
Input terminal	RF IN terminal

1. Supply an RF signal (monoral sound 400Hz 100%MOD).
2. Connect TPM0 to ground through an electrolytic capacitor (10uF, 50V or more), as shown below.
3. Connect TPM1 to ground through an resistor (1/4W 820KΩ).
4. Observe the frequency at TP3.
5. Activate the circuit adjustment mode. (refer to page 18)
6. Set the adjustment function to "MCS". ("AUDIO" button)
7. Set the adjustment items shown in the list below to the initial data value. ("VIDEO" and "ADJUST"buttons)
8. Select adjustment item "0 PVC". ("VIDEO" button)
9. Set the adjustment data so that the frequency is 78.67±0.40kHz. ("ADJUST" button)
10. Write the adjustment data into memory. (Press "ENTER")
11. Terminate the circuit adjustment mode. (press "MENU" twice)

Note : Adjustment item 2 (Stereo VCO) must be performed immediately after this adjustment.

PCB-AV (COMPONENT SIDE)



Adjustment item number	Adjustment item	Initial Data
0	PVC	32
1	TVC	32
2	INP	32
3	FIL	63
4	LSP	32
5	HSP	32

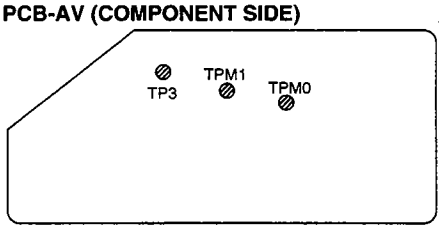
[Multi Channel Sound circuit] 2. Stereo VCO	**Adjustment purpose**	Set the reference frequency for the multiplex IC oscillator.
	Symptom when incorrectly adjusted	No STEREO reception.

Measuring instrument	Frequency counter
Test point	TP3
EXT trigger	– – –
Measurement range	– – –
Input signal	RF signal (monoral sound)
Input terminal	RF IN terminal

* This adjustment must follow item 1 (SAP VCO).
1. Refer to the steps 1 through 6 in the item 1 (SAP VCO) for the connection and setting of measuring instruments, etc.
2. Select adjustment item "1 TVC". ("VIDEO" button)
3. Set the adjustment data so the frequency is 15.73 ±0.08KHz. ("ADJUST" button)
4. Write the adjustment data into memory. (Press "ENTER")
5. Terminate the circuit adjustment mode. (Press "MENU" twice)
6. Remove the resistor from TPM1 and the electrolytic capacitor from TPM0.

Note : Adjustment item 3 (Input level) must be performed immediately after this adjustment.

PCB-AV (COMPONENT SIDE)



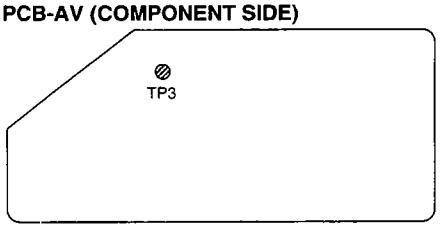
[Multi Channel Sound circuit] 3. Input level	**Adjustment purpose**	Set the level of the input signal for the multi channel sound circuit.
	Symptom when incorrectly adjusted	Distorted sound during an MCS broadcast.

Measuring instrument	Oscilloscope
Test point	TP3
EXT trigger	– – –
Measurement range	DIV 50mV TIM 2ms
Input signal	RF signal (monoral sound)
Input terminal	RF IN terminal

* This adjustment must follow item 2(Stereo VCO).
1. Supply an RF signal (monoral sound 400Hz 100%MOD).
2. Observe the waveform at TP3.
3. Activate the circuit adjustment mode. (refer to page 18)
4. Set the adjustment function to "MCS". ("AUDIO" button)
5. Select adjustment item "2 INP". ("VIDEO" button)
6. Set the adjustment data so that the amplitude of the waveform is 1.41±0.03 Vp-p. ("ADJUST" button)
7. Write the adjustment data into memory. (Press "ENTER")
8. Terminate the circuit adjustment mode. (Press "MENU" twice)

Note : Adjustment item 4 (Filter) must be performed immediately after this adjustment.

PCB-AV (COMPONENT SIDE)



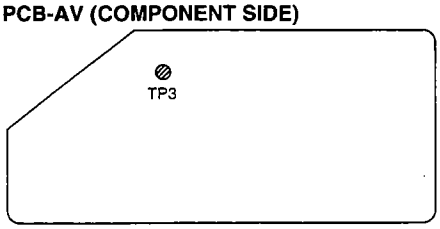
[Multi Channel Sound circuit] 4. Filter	**Adjustment purpose**	Filter for pilot signal.
	Symptom when incorrectly adjusted	Poor S/N ratio of signal in STEREO and SAP modes.

Measuring instrument	Oscilloscope
Test point	TP3
EXT trigger	– – –
Measurement range	DIV 10mV TIM 2ms
Input signal	RF signal (stereo sound)
Input terminal	RF IN terminal

* This adjustment must follow item 3(Input level).
1. Supply an RF signal. (Stereo Pilot signal but sound signal).
2. Observe the waveform at TP3.
3. Activate the circuit adjustment mode. (refer to page 18)
4. Set the adjustment function to "MCS". ("AUDIO" button)
5. Select adjustment item "3 FIL". ("VIDEO" button)
6. Set the adjustment data for minimum amplitude of the wareform. ("ADJUST" button)
   Decrease the data from 63, and set the data to the value where the first minimum amplitude is obtained.
7. Write the adjustment data into memory. (Press "ENTER")
8. Terminate the circuit adjustment mode. (Press "MENU" twice)

Note : Adjustment item 5 (separation) must be performed immediately after this adjustment.

PCB-AV (COMPONENT SIDE)

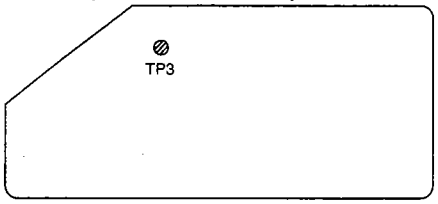


[Multi Channel Sound circuit] 5. Separation	**Adjustment purpose**	Adjust right and left separation.
	Symptom when incorrectly adjusted	Poor or no stereo separation.

Measuring instrument	Oscilloscope
Test point	TP3
EXT trigger	– – –
Measurement range	DIV 10mV TIM 2ms
Input signal	RF signal (stereo sound)
Input terminal	RF IN terminal

* This adjustment must follow item 4 (Filter).
1. Supply an RF signal (L-CH only stereo sound 300Hz 30%MOD).
2. Observe the waveform at TP3.
3. Activate the circuit adjustment mode. (refer to page 18)
4. Set the adjustment function to "MCS". ("AUDIO" button)
5. Make sure that the data of "5 HSP" is "32".
6. Select adjustment item "4 LSP". ("VIDEO" button)
7. Set the adjustment data so the amplitude of the waveform (300Hz) is minimum. ("ADJUST" button)
8. Change the modulating signal to 3KHz.
9. Select adjustment item "5 HSP". ("VIDEO" button)
10. Set the adjustment data so that amplitude of the waveform (3kHz) is minimum. ("ADJUST" button)
11. Repeat the steps 6 to 7.
12. Write the adjustment data into memory. (Press "ENTER")
13. Terminate the circuit adjustment mode. (Press "MENU" twice)

PCB-AV (COMPONENT SIDE)



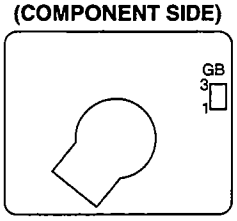
[Chroma circuit] 6. White level	**Adjustment purpose**	To set the maximum white level.
	Symptom when incorrectly adjusted	Too bright or too dark white areas of the picture.

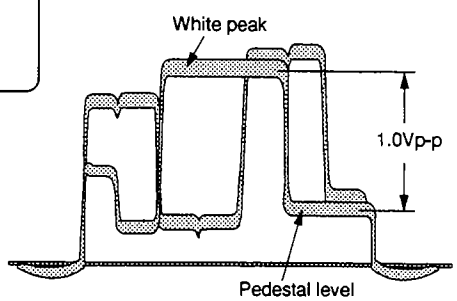
Measuring instrument	Oscilloscope
Test point	pin 1 of connector GB
EXT trigger	– – –
Measurement range	DIV 50mV TIM 10µs
Input signal	VIDEO signal (color bar)
Input terminal	VIDEO IN terminal

1. Supply a VIDEO signal (color bar).
2. Activate the circuit adjustment mode. (refer to page 18)
3. Set the adjustment function to "VCH". ("AUDIO" button)
4. Set the adjustment items shown in the list below to the initial data value.
5. Set the adjustment data of the adjustment item "35 GMA " to "0". ("VIDEO" and "ADJUST" buttons)
6. Set the adjustment data of the adjustment item "36 GMG " to "0". ("VIDEO" and "ADJUST" buttons)
7. Set the adjustment data of the adjustment item "02 BRT " to "150". ("VIDEO" and "ADJUST" buttons)
8. Select adjustment item "03 CNT". ("VIDEO" button)
9. Observe the waveform at Pin 1 of connector GB.
10. Set the adjustment data so the waveform on the oscilloscope matches waveform below. ("ADJUST" button)
11. Write the adjustment data into memory. (Press "ENTER")

Note : Adjustment item 7 (Vector) must be performed immediately after this adjustment.

PCB-VMCRT (COMPONENT SIDE)





No.	Adjustment item	Initial data	No.	Adjustment item	Initial data	No.	Adjustment item	Initial data
00	COL	80	17	AFC	3	38	R-Y	16
05	CTR	255	26	CRS	1	39	B-Y	21
06	CTG	255	28	DRR	1	40	G-Y	1
07	CTB	255	29	DRB	1			
08	DHR	63	30	CRS	1			
09	DHB	63	33	DL1	0			

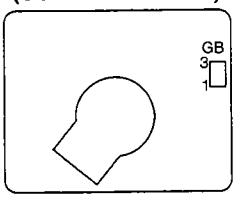
[Chroma circuit] 7. Vector	**Adjustment purpose**	To produce correct hues.
	Symptom when incorrectly adjusted	Different hues between the main and sub pictures.

Measuring instrument	Oscilloscope
Test point	X-CH:pin 2 of connector GB Y-CH:pin 1 of connector GB
EXT trigger	– – –
Measurement range	DIV 50mV X-Y mode
Input signal	VIDEO signal (color bar)
Input terminal	VIDEO IN terminal

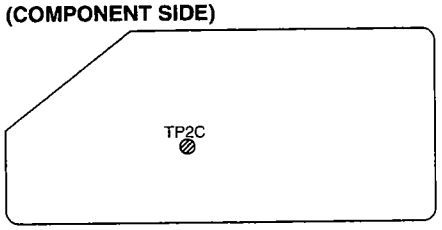
* This adjustment must follow item 6 (White level).
1. Supply a VIDEO signal (color bar).
2. Activate the circuit adjustment mode. (refer to page 18)
3. Connect TP2C to the ground through an electrolytic capacitor (330µF, 16V or more).
4. Set the adjustment function to "VCH". ("AUDIO" button)
5. Select adjustment item "01 TNT". ("VIDEO" button)
6. Observe the waveform at pin 1 and pin 2 of connecter GB.
7. Set the adjustment data so that the red point in the vector waveform, is at 106 degrees. ("ADJUST" button)
8. Write the adjustment data into memory. (Press "ENTER")

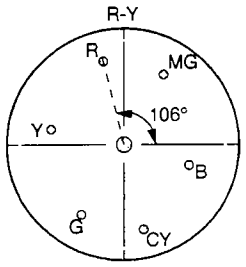
Note : Adjustment item 8 (Color output) must be performed immediately after this adjustment.

PCB-VMCRT (COMPONENT SIDE)



PCB-AV (COMPONENT SIDE)





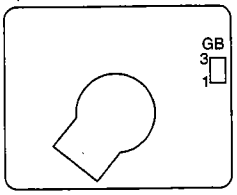
Vector waveform

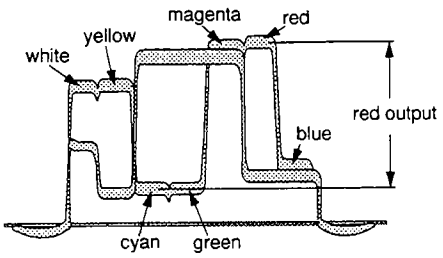
[Chroma circuit] 8. Color output	**Adjustment purpose**	To set the color level of picture.
	Symptom when incorrectly adjusted	Excess or insufficient color.

Measuring instrument	Oscilloscope
Test point	pin1 of connecter GB
EXT trigger	– – –
Measurement range	DIV 50mV TIM 10µs
Input signal	VIDEO signal (color bar)
Input terminal	VIDEO IN terminal

* This adjustment must follow item 7 (Vector).
1. Supply a VIDEO signal (color bar).
2. Activate the circuit adjustment mode. (refer to page 18)
3. Set the adjustment function to "VCH". ("AUDIO" button)
4. Select adjustment item "00 COL". ("VIDEO" button)
5. Observe the waveform at pin 1 of connector GB.
6. Set the adjustment data so the amplitude of the red output voltage waveform is 1.80±0.05Vp-p. ("ADJUST" button)
7. Set the adjustment data of the adjustment item "35 GMA" to "15". ("VIDEO" and "ADJUST" buttons)
8. Set the adjustment data of the adjustment item"36 GMG" to "15". ("VIDEO" and "ADJUST" buttons)
9. Write the adjustment data into memory. (Press "ENTER")
10. Terminate the circuit adjustment mode. (Press "MENU" twice)
11. Remove the electrolytic capacitor from TP2C and the ground.

PCB-VMCRT (COMPONENT SIDE)



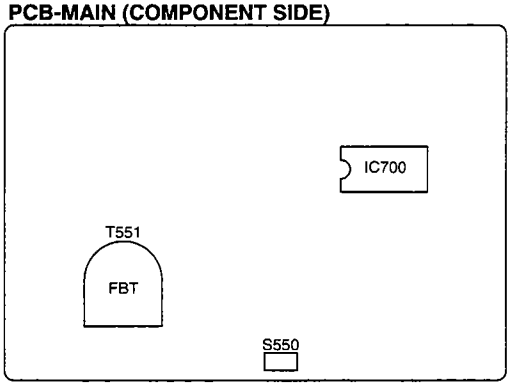


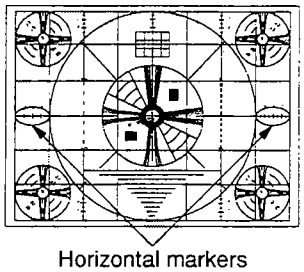
[Deflection circuit] 9. Horizontal width	**Adjustment purpose**	To set the width of picture.
	Symptom when incorrectly adjusted	Picture compressed or expanded horizontally.

Measuring instrument	– – –
Test point	– – –
EXT trigger	– – –
Measurement range	– – –
Input signal	VIDEO signal (monoscope)
Input terminal	VIDEO IN terminal

1. Supply a VIDEO signal (monoscope).
2. Set S550 to the mechanical center position. (CS-35303 only)
   Set S550 so that the picture is nearly centered.(CS-31203, CS-31203C, CS-31303, CS-31303C, CK-35403 only)
3. Activate the circuit adjustment mode. (refer to page 18)
4. Set the adjustment function to "VCH". ("AUDIO UP/Donn button)
5. Set the adjustment data of the adjustment item "51 HCM" to the data shown in the list below. ("VIDEO" and "ADJUST" buttons)
6. Select adjustment item "12 HWD". ("VIDEO" button)
7. Set the adjustment data so that the sum of markers for the horizontal width is 6.5. ("ADJUST" button)
8. Write the adjustment data into memory. (Press "ENTER")
9. Terminate the circuit adjustment mode. (Press "MENU" twice)

PCB-MAIN (COMPONENT SIDE)





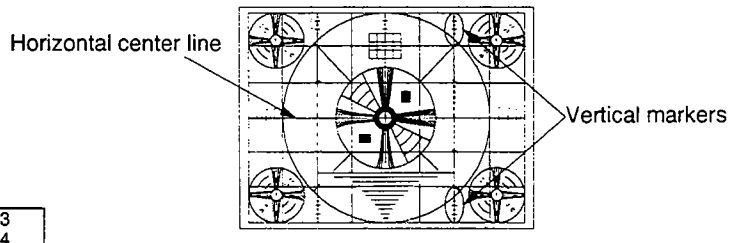
Horizontal markers

	CS-31303 CS-31303C	CS-31203 CS-31203C	CS-35303	CK-35304
51 HCM	9		8	7

[Deflection circuit] 10.Vertical linearity and height	**Adjustment purpose**	To set vertical height and linearity.
	Symptom when incorrectly adjusted	Incorrect vertical height or linearity.

Measuring instrument	– – –
Test point	– – –
EXT trigger	– – –
Measurement range	– – –
Input signal	VIDEO signal (monoscope)
Input terminal	VIDEO IN terminal

1. Supply a VIDEO signal (monoscope).
2. Activate the circuit adjustment mode.(refer to page 18)
3. Set the adjustment function to "VCH". ("AUDIO button)
4. Set the adjustment data of the adjustment item "50 VCM" to the value shown in the list below. ("VIDEO" and "ADJUST" buttons)
5. Select adjustment item "45 VLR" (vertical linearity). ("VIDEO" button)
6. Set the adjustment data so that the distances from the top and bottom of the largest circle, to the center horizontal line are equal.
   ("ADJUST" button)
7. Select adjustment item "10 VHT" ("Vertical height). ("VIDEO" button)
8. Set the adjustment data so that the sum of markers for the vertical height is 4.2. ("ADJUST" button)
9. Write the adjustment data into memory. (Press "ENTER")
10. Terminate the circuit adjustment mode. (Press "MENU" twice)



	CS-31303 CS-31303C	CS-31203 CS-31203C	CS-35303 CK-35304
50 VCM	9		8

[Deflection circuit] 11.Side PCC	**Adjustment purpose**	Minimize side pincushion distortion.
	Symptom when incorrectly adjusted	Horizontal distortion in the picture.

Measuring instrument	– – –
Test point	– – –
EXT trigger	– – –
Measurement range	– – –
Input signal	VIDEO signal (cross hatch)
Input terminal	VIDEO IN terminal

* This adjustment must follow item 10(Vertical linearity and height).
1. Supply a VIDEO signal (crosshatch).
2. Activate the circuit adjustment mode. (refer to page 18)
3. Set the adjustment function to "VCH". ("AUDIO" button)
4. Select adjustment item "11 PAM" (PCC-AMP). ("VIDEO" button)
5. Note the second vertical lines from both right and left sides. Set the adjustment data so that the second line is almost straight. ("ADJUST" button)
6. Select adjustment item "47 PPH". (PCC-Phase). ("VIDEO" button)
7. Note the second lines from both right and left sides of the cross hatch. Set the adjustment data so that the distortion is symmetrical at the top and botton of the vertical lines. ("ADJUST" button)
8. Alternately repeat steps 4 and 7 to minimize side raster distortion.
9. Write the adjustment data into memory. (Press "ENTER")
10. Terminate the circuit adjustment mode. (Press "MENU" twice)

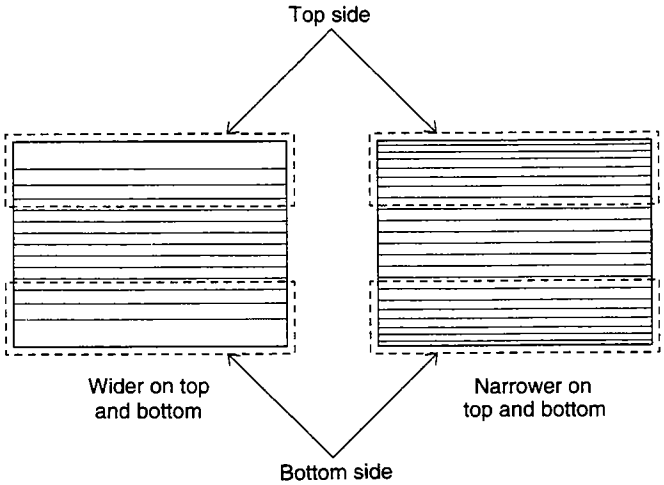
Note : If the side raster is significantly distorted in the middle, set the adjustment data of items "48 PC1" (bottom PCC corner AMP), "49PC2" (top PCC corner AMP) and "11 PAM" (PCC-AMP), for minimum distortion.

[Deflection circuit] 12.Vertical S Correction	**Adjustment purpose**	Set the Vertical compression/expansion at the top and bottom.
	Symptom when incorrectly adjusted	Vertically compressed or expanded at the top and bottom of the picture.

Measuring instrument	– – –
Test point	– – –
EXT trigger	– – –
Measurement range	– – –
Input signal	VIDEO signal (cross hatch)
Input terminal	VIDEO IN terminal

1. Supply a VIDEO signal (crosshatch).
2. Activate the circuit adjustment mode. (refer to page 18)
3. Set the adjustment function to "VCH". ("AUDIO" button)
4. Select adjustment item "44 VSC". ("VIDEO" button)
5. Set the adjustment data so that the height of the squares in the cross hatch are equal at the top, bottom, and middle of the pattern. ("ADJUST" button)
6. Write the adjustment data into memory. (Press "ENTER")
7. Terminate the circuit adjustment mode. (Press "MENU" twice)

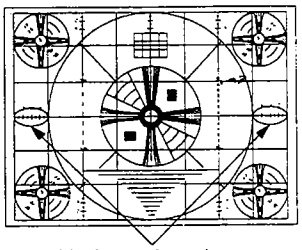
Note : Adjustment item 10(Vertical linearity, Vertical Height) must be performed immediately after this adjustment.



[Deflection circuit] 13. Horizontal position	**Adjustment purpose**	To set the horizontal position of the picture on screen.
	Symptom when incorrectly adjusted	Picture shifted to the left or the right.

Measuring instrument	– – –
Test point	– – –
EXT trigger	– – –
Measurement range	– – –
Input signal	VIDEO signal (monoscope)
Input terminal	VIDEO IN terminal

*This adjustment must follow item 9 (Horizontal width).
1. Supply a VIDEO signal (monoscope).
2. Activate the circuit adjustment mode. (refer to page 18)
3. Set the adjustment function to "VCH". ("AUDIO" button)
4. Select adjustment item "43 HPH". ("VIDEO" button)
5. Set the adjustment data so the left and right markers are the same. ("ADJUST" button)
6. Write the adjustment data into memory. (Press "ENTER")
7. Terminate the circuit adjustment mode. (Press "MENU" twice)

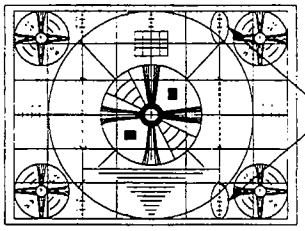


Horizontal markers

[Deflection circuit] 14. Vertical position	**Adjustment purpose**	To set the vertical position of the picture.
	Symptom when incorrectly adjusted	The picture will be too high or too low, on the screen.

Measuring instrument	– – –
Test point	– – –
EXT trigger	– – –
Measurement range	– – –
Input signal	VIDEO signal (monoscope)
Input terminal	VIDEO IN terminal

1. Supply a VIDEO signal (monoscope).
2. Activate the circuit adjustment mode. (refer to page 18)
3. Set the adjustment function to"VCH". ("AUDIO" button)
4. Select adjustment item "46 VSF". ("VIDEO" button)
5. Set the adjustment data so the upper and lower markers are the same. ("ADJUST" button)
6. Write the adjustment data into memory. (Press "ENTER")
7. Terminate the circuit adjustment mode. (Press "MENU" twice)



Vertical markers

[CRT circuit] 15. CRT bias, Cut off	**Adjustment purpose**	Setting the cut off level of the three electron beams.
	Symptom when incorrectly adjusted	Monochrome has a color tint.

Measuring instrument	– – –
Test point	– – –
EXT trigger	– – –
Measurement range	– – –
Input signal	VIDEO signal (monoscope)
Input terminal	VIDEO IN terminal

1. Supply a VIDEO signal (monoscope).
2. Activate the circuit adjustment mode. (refer to page 18)
3. Set the adjustment function to "VCH" ("AUDIO button) and set the adjustment items shown in the Table 1 and Table 2 to the initial data value.
4. Set the data of item "35 GMA" to "00". ("VIDEO" and "ADJUST" buttons)
5. Select adjustment item."19 SVS".("VIDEO" button)
6. Set the adjustment data to "00" (The screen will change to display a single horizontal line). ("ADJUST" button)
7. Set the SCREEN VR on FBT(T551) to the point where a red, green, or blue line just becomes visible.
8. Set the adjustment data to"01". (The screen will return to the normal display.) ("ADJUST" button)
9. Referring to adjustment items "05 CTR" , "06 CTG" and "07 CTB", adjust the data of the items for to the two colors not visible in the step 7. Adjust data so the horizontal line is white. ("VIDEO" and "ADJUST" buttons)

Note : The screen displays the single white line for a certain amount of time after the adjustment data is modified. (While adjusting, the screen goes to a single horizontal line.)

Note : CUT OFF data for the color visible on the screen displaying the single line in step 7 must not be changed.

10. Write the adjustment data into memory. (Press "ENTER")
11. Terminate the circuit adjustment mode. (Press "MENU" twice)

Note : Adjustment item 16 (while balance)must be performed immediately after this adjustment.

No.	Adjustment Item	Initial Data	No.	Adjustment Item	Initial Data
02	BRT	135	28	DRR	01
03	CNT	70	29	DRB	01
08	DHR	63	30	CBS	01
09	DHB	63	36	GMG	15
26	CRS	01			

Table. 1

The color of light to be adjusted	Adjustment Item	Initial Data
Red	05 CTR	255
Green	06 CTG	255
Blue	07 CTB	255

Table. 2

[CRT circuit] 16. White balance	**Adjustment purpose**	The best white balance of picture.
	Symptom when incorrectly adjusted	Colored monochrome.

Measuring instrument	– – –
Test point	– – –
EXT trigger	– – –
Measurement range	– – –
Input signal	VIDEO signal (white raster)
Input terminal	VIDEO IN terminal

* This adjustment must follow item 15(CRT bias Cut, off).
1. Supply a VIDEO signal (white raster).
2. Activate the circuit adjustment mode. (refer to page 18)
3. Set the adjustment function to "VCH". ("AUDIO" button)
4. Select adjustment items "8 DHR" (R-DRIVE) and "9 DHB" (B-DRIVE). ("VIDEO" button)
5. Set the adjustment data for a white raster. ("ADJUST" button)

Note : If the adjustment data in "8 DMR" and "9 DMB" needs to be decreased below the adjustable range, change the data in "28 DRR" from "01" to "00", for adjustment item "8 DMB", and in "29 DRB" for "9DMB".

6. Select adjustment item "19SVS" (Single Horizontal Line Switchover). ("VIDEO" button)
7. Set the adjustment data to "00". (The screen will be changed to display a single horizontal line.) ("ADJUST" button)
8. Make sure that the color of the horizontal line is white. If not white, repeat the adjustment in item 15(CRT bias, Cut off).
9. Write the adjustment data into memory. (Press "ENTER")
10. Terminate the circuit adjustment mode. (Press "MENU" twice)

Note : Adjustment item 17 (Black level) must be performed immediately after this adjustment.

[Video circuit] 17. Black level	**Adjustment purpose**	Picture luminance.
	Symptom when incorrectly adjusted	Excessive or insufficient brightness.

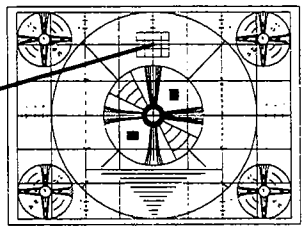
Measuring instrument	– – –
Test point	– – –
EXT trigger	– – –
Measurement range	– – –
Input signal	VIDEO signal (monoscope)
Input terminal	VIDEO IN terminal

* This adjustment must follow item 16(White balance).
1. Supply a VIDEO signal (monoscope).
2. Activate the circuit adjustment mode. (refer to page 18)
3. Set the adjustment function to "VCH". ("AUDIO" button)
4. Select adjustment item "2 BRT" (BRIGHT CONT). ("VIDEO" button)
5. Observe a gradation signal inside a monoscope signal, and set the adjustment data so that the levels of 10% and 0% areas of the gradation are the same (Black level 10%). ("ADJUST" button)
6. Write the adjustment data into memory. (Press "ENTER")
7. Terminate the circuit adjustment mode. (Press "MENU" twice)

Note : Adjustment item 18 (Sub cont) must be performed immediately after this adjustment.

gradation signal

40%	30%	20%	10%
50%	0%	0%	0%
60%	70%	80%	90%



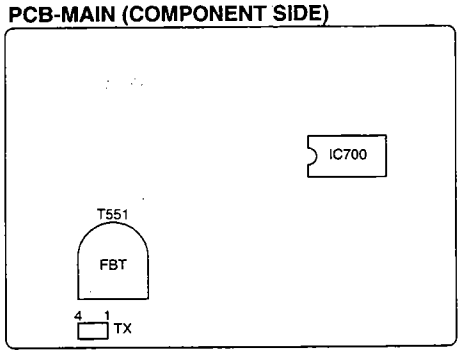
Monoscope signal

[Videe circuit] 18. Sub cont	**Adjustment purpose**	To set beam current to its optimum value.
	Symptom when incorrectly adjusted	Excessive or insufficient contrast.

Measuring instrument	DC miliammeter
Test point	+ lead : pin 4 of connector TX – lead : pin 1 of connector TX
EXT trigger	– – –
Measurement range	– – –
Input signal	RF signal (gray scale 87.5%MOD)
Input terminal	RF IN terminal

* This adjustment must follow item 17(Black level).
* Preheat the set for two minutes or more.
1. Supply an RF signal (gray scale 87.5% MOD).
2. Activate the circuit adjustment mode. (refer to page 18)
3. Set the adjustment function to "VCH". ("AUDIO" button)
4. Select adjustment item "35 GMA". ("VIDEO" button)
5. Set the adjustment data to "00". ("ADJUST" button)
6. Measure the current at pins 1 and 4 of connector TX (Plus lead to pin 4 of connector TX).
7. Select adjustment item "3 CNT" (CONTRAST). ("VIDEO" button)
8. Set the adjustment data so that the DC miliammeter reads the value shown below. ("ADTUST" bntton)
9. Select adjustment item "35 GMA". ("VIDEO" bntton)
10. Set the adjustment data to "15". ("ADJUST" button)
11. Write the adjustment data into memory. (Press "ENTER")
12. Terminate the circuit adjustment mode. (Press "MENU" twice)

PCB-MAIN (COMPONENT SIDE)



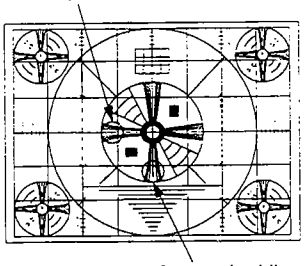
	CS-31203 CS-31203C	CS-31303 CS-31303C	CK-35304	CS-35303
Beam current	2600±100μA			3400±100μA

[Focus circuit] 19.Focus (CS-35303, CK-35304 only)	**Adjustment purpose**	Sharpness of picture.
	Symptom when incorrectly adjusted	Poor focus.

Measuring instrument	– – –
Test point	– – –
EXT trigger	– – –
Measurement range	– – –
Input signal	VIDEO signal (monoscope)
Input terminal	VIDEO IN terminal

1. Supply a VIDEO signal (monoscope).
2. Observe the vertical lines and adjust FOCUS control on the FOCUS PACK for best focus. (CS-35303 only)
   Observe the vertical lines and adjust FOCUS-2 control on the FBT for best focus. (CK-35304 only)
3. Observe the horizontal lines, and adjust FOCUS-2 control on the FBT for best focus. (CS-35303 only)
   Observe the horizontal lines, and adjust FOCUS-1 control on the FBT for best focus. (CK-35304 only)
4. Repeat steps 2 and 3, two or more times until no further improvement is seen.

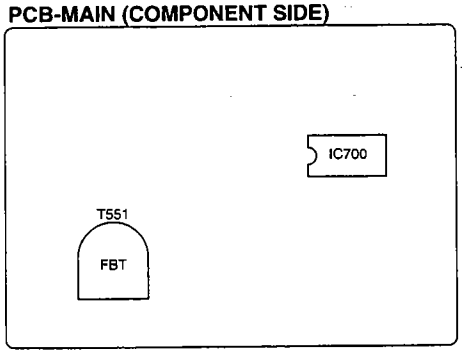
Check point for horizontal line



Check point for vertical line

Monoscope signal

PCB-MAIN (COMPONENT SIDE)

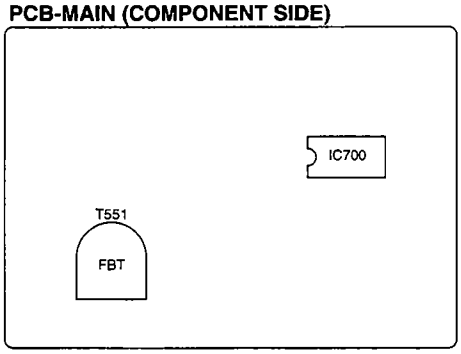


[Focus circuit] 20. Focus (CS-31303, CS-31303C CS-31203, CS-31203C only)	**Adjustment purpose**	Sharpness of picture.
	Symptom when incorrectly adjusted	Poor focus.

Measuring instrument	– – –
Test point	– – –
EXT trigger	– – –
Measurement range	– – –
Input signal	RF signal (standard broadcast)
Input terminal	RF IN terminal

1. Supply an RF signal (standard broadcast).
2. Adjust FOCUS control on FBT (T551) for best overall focus.

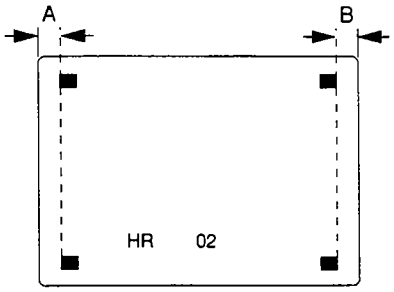
PCB-MAIN (COMPONENT SIDE)



[Screen character circuit] 21. Character position	**Adjustment purpose**	To position the character display.
	Symptom when incorrectly adjusted	Incorrect character position.

Measuring instrument	– – –
Test point	– – –
EXT trigger	– – –
Measurement range	– – –
Input signal	RF signal (standard broadcast)
Input terminal	RF IN terminal

1. Supply an RF signal (standard broadcast).
2. Activate the circuit adjustment mode. (refer to page 18)
3. Set the adjustment function to "HR". ("AUDIO" button)
4. Adjust the adjustment data so that spaces A and B are the same width. ("ADJUST" bntton)
5. Write the adjustment data into memory. (Press "ENTER")
6. Terminate the circuit adjustment mode. (Press "MENU" twice)

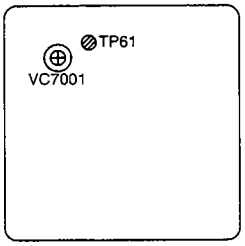


[PIP circuit] 22. PIP fsc (CS-35303, CK-35304 CS-31303, CS-31303C only)	**Adjustment purpose**	Set the clock frequency for PIP.
	Symptom when incorrectly adjusted	Disturbance or no color in the sub picture.

Measuring instrument	Frequency counter
Test point	TP61
EXT trigger	– – –
Measurement range	– – –
Input signal	RF signal (standard broadcast)
Input terminal	RF IN terminal

1. Supply an RF signal (standard broadcast).
2. Display standard contrast on the sub picture screen.
   Supply no signal for the main screen.
3. Observe the frequency at TP61.
4. Adjust VC7001 so that the frequency is 3.579545±0.000030MHz.

PCB-PIP
(COMPONENT SIDE)



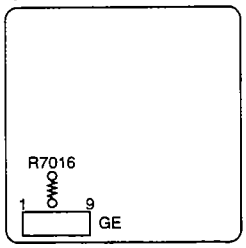
[PIP circuit] 23. PIP chroma gain (CS-35303, CK-35304 CS-31303, CS-31303C only)	**Adjustment purpose**	To set the color level between main and sub picture.
	Symptom when incorrectly adjusted	Different color level between main and sub picture.

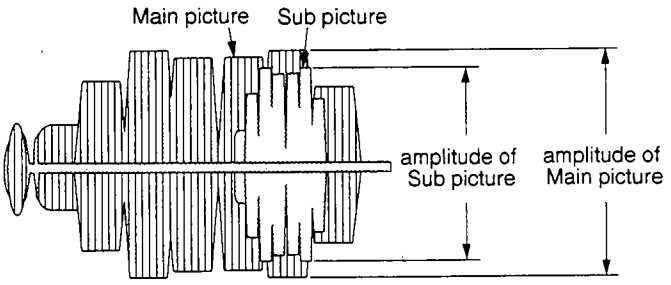
Measuring instrument	Oscilloscope
Test point	pin 7 of connector GE
EXT trigger	– – –
Measurement range	DIV 20mV TIM 10μs
Input signal	VIDEO signal (color bar)
Input terminal	VIDEO IN terminal

* Preheat the set for one minutes or more.
1. Supply a VIDEO signal (color bar).
2. Activate the circuit adjustmant mode. (refer to page 18)
3. Set the adjustmant function to "PIP". ("AUDIO" button)
4. Set all the items in adjustment function "PIP" to the initial data value (refer to page 21). ("VIDEO" and "ADJUST" buttons)
5. Observe the waveform at pin 7 of connector GE (GE side of R7016).
6. Select adjustmant item "1 COLR". ("VIDEO" button)
7. Set the adjustmant data so that the amplitude of the waveforms of the main and sub pictures are equal. ("ADJUST" button)
8. Write the adjustmet data into memory. (Press "ENTER")
9. Terminate the circuit adjustment mode. (Press "MENU" twice)

Note : Adjustment item 24 (PIP Sub TINT) must be performed immediately after this adjustment.

PCB-PIP
(COMPONENT SIDE)





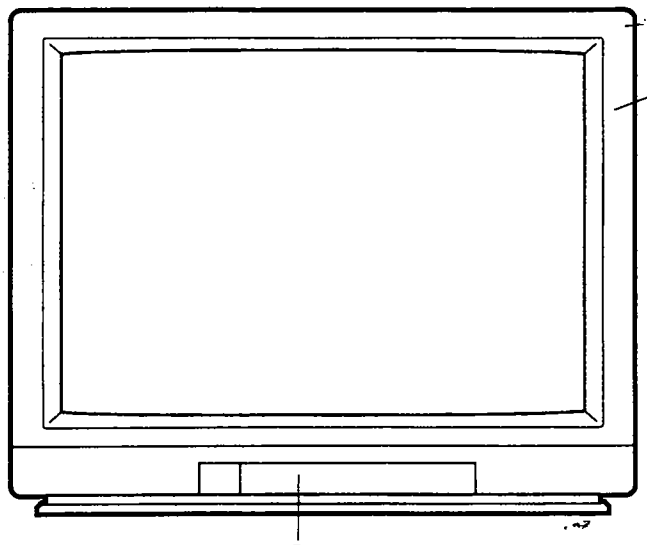
[PIP circuit] 24. PIP Sub TINT (CS-35303, CK-35304 CS-31303, CS-31303C only)	**Adjustment purpose**	To obtain the same hue in main and sub pictures.
	Symptom when incorrectly adjusted	Different hue between main and sub picture, and color smear.

Measuring instrument	– – –
Test point	– – –
EXT trigger	– – –
Measurement range	– – –
Input signal	VIDEO signel (color bar)
Input terminal	VIDEO IN terminal

*Preheat the set for one minutes or more.
*This adjustment must follow item 23 (PIP chroma gain).
1. Supply a VIDEO signal (color bar).
2. Activate PIP and display the same picture on main picture screen and sub picture screen.
3. Activate the circuit adjustment mode. (refer to page 18)
4. Set the adjustment funstion to "PIP". ("AUDIO" button)
5. Select adjustment item "0 TINT". ("VIDEO" button)
6. Set the adjustment data so that the hue in the sub picture corresponds to the hue in the main picture.
7. Write the adjustment data into memory. (Press "ENTER")
8. Terminal the circuit adjustment mode. (Press "MENU" twice)

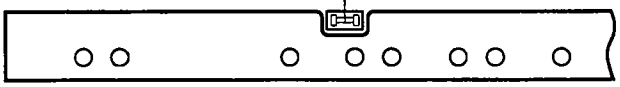
PARTS LIST COSMENTIC PARTS REFERENCE

[for CS-31203, CS-31203C, CS-31303, CS-31303C]

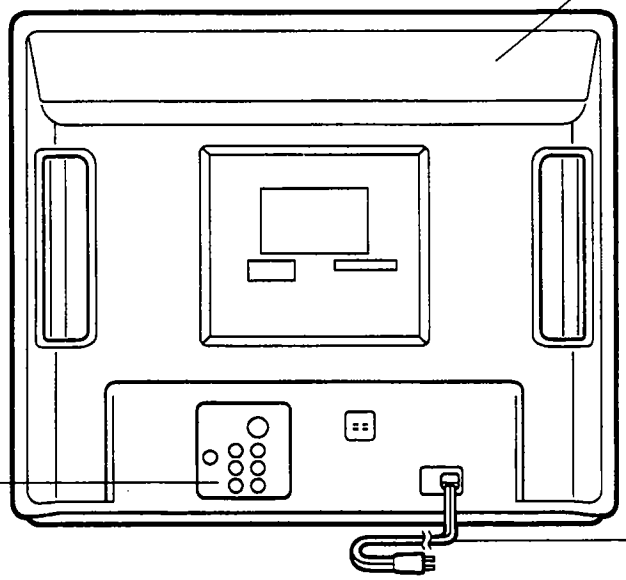


Front cabinet Assy
701A457O90
[CS-31203, CS-31303]
701A100O90
[CS-31203C, CS-31303C]

Door
752C075O30



Door Catch
761C352O10

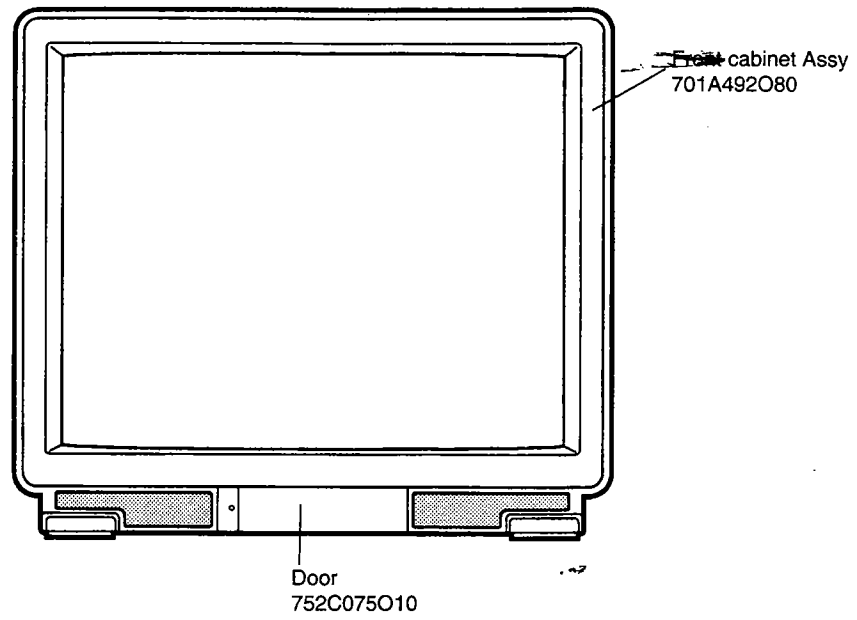


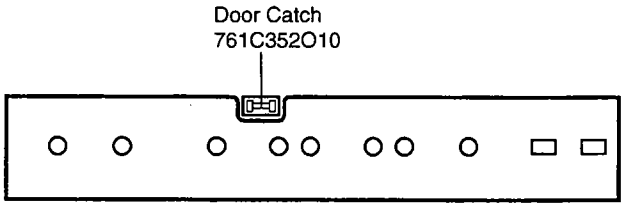
Back cover
700C180O20(CS-31203)
700C180O30(CS-31203C)
700C179O90(CS-31303)
700C180O10(CS-31303C)

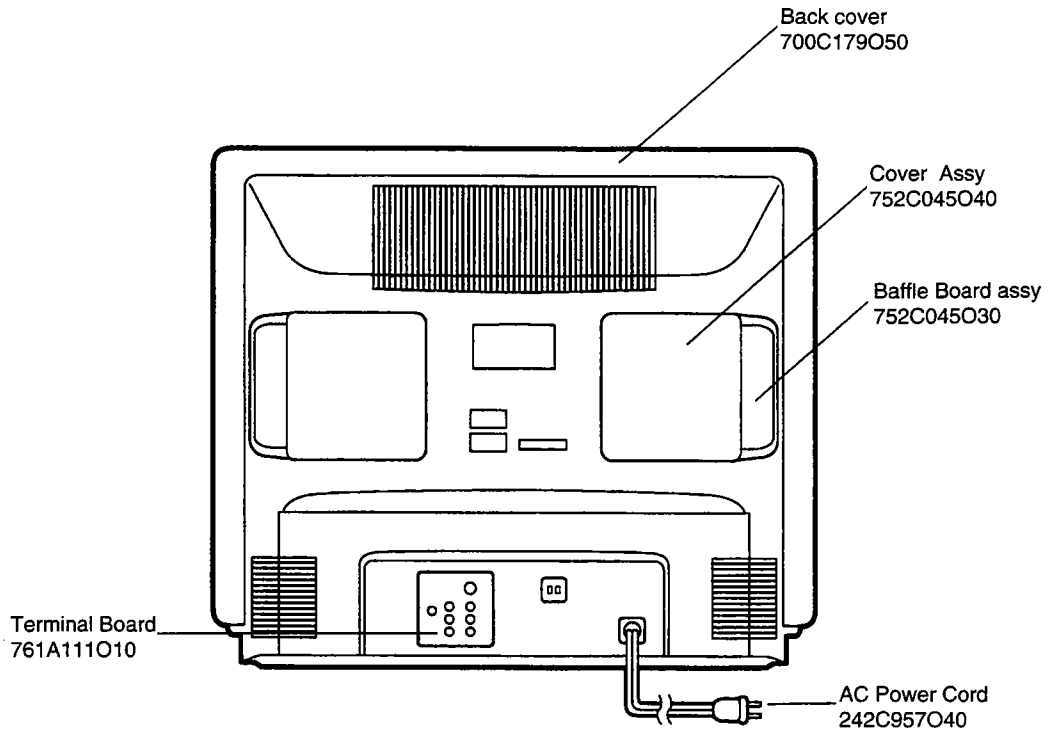
Terminal Board
761A111O10

AC Power Cord
242C957O40

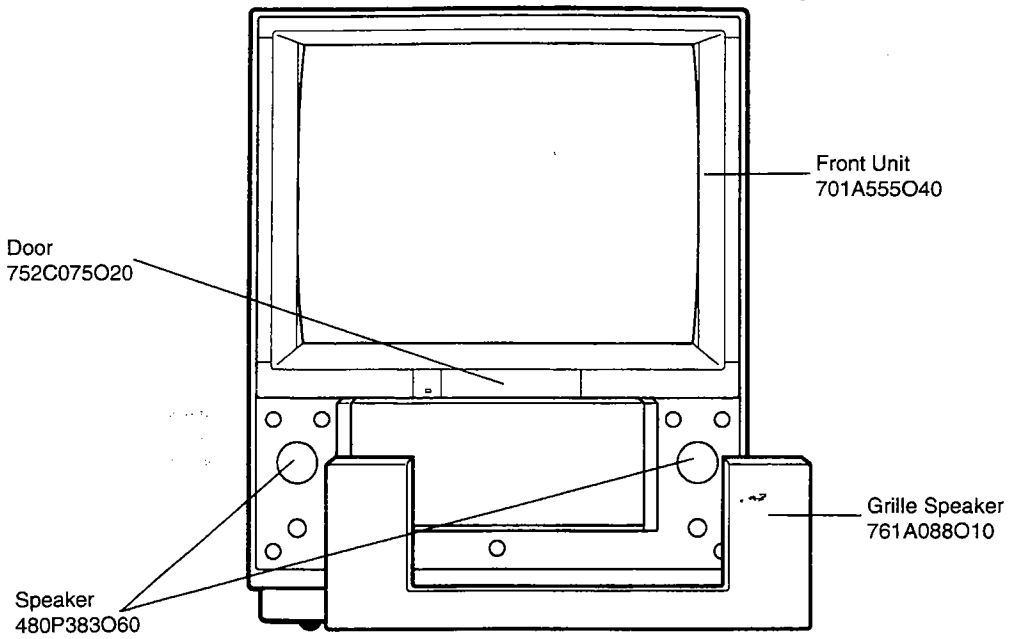
[for CS-35303]

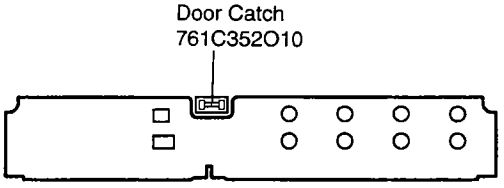

Front cabinet Assy
701A492O80
Door
752C075O10

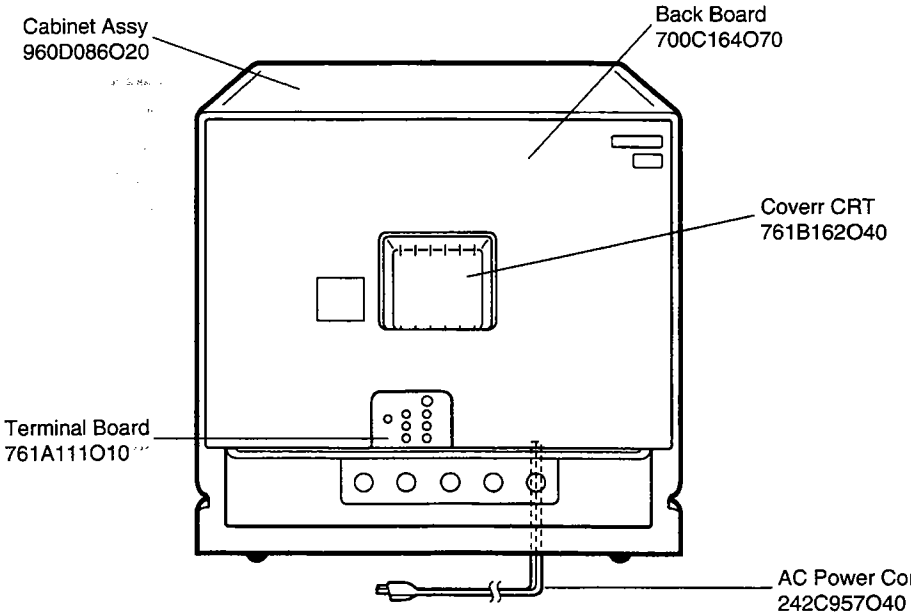

Door Catch
761C352O10


Back cover
700C179O50
Cover Assy
752C045O40
Baffle Board assy
752C045O30
Terminal Board
761A111O10
AC Power Cord
242C957O40

[for CK-35304]


Front Unit
701A555O40
Door
752C075O20
Grille Speaker
761A088O10
Speaker
480P383O60


Door Catch
761C352O10


Cabinet Assy
960D086O20
Back Board
700C164O70
Coverr CRT
761B162O40
Terminal Board
761A111O10
AC Power Cord
242C957O40

PARTS LIST

MODEL : CS-31203/CS-31203C/CS-31303/CS-31303C/CS-35303/CK-35304

In order to expedite delivery of replacement part orders.

Specify : 1.Model number/Serial number
2.Part number and Description
3.Quantity

Unless full information is supplied,delay in execution of orders will result.

* : Warranty return items

: Critical components

MARK	B	C	D	F	G	J	K
TOLERANCE (%)	±0.1	±0.25	±0.5	±1	±2	±5	±10

MARK	M	N	V	X	Z	P	Q
TOLERANCE (%)	±20	±30	+10 -10	+40 -20	+80 -20	+100 -0	+30 -10

MARK	B	C	D	F	G
TOLERANCE (pF)	±0.1	±0.25	±0.5	±1	±2

ABBREVIATION

[31203] : CS-31203
[31203C] : CS-31203C
[31303] : CS-31303
[31303C] : CS-31303C
[35303] : CS-35303
[35304] : CK-35304

[31203] : CS-31203 [31203C] : CS-31203C [31303] : CS-31303 [31303C] : CS-31303C [35303] : CS-35303 [35304] : CK-35304

SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION
		TUBES	
V 271	255P952O10	CRT ASSY	M78JUA060X11 [31203,31203C,31303,31303C]
V 271	255P949O10	CRT ASSY	A89KPP50X03[35303]
V 271	251P754O10	CRT ASSY	M89KZP411X[35304]
V 271	255B835O04	CRT ASSY	[35304]
		INTEGRATED CIRCUITS	
IC201	270P190O10	IC	AN5306NFBS
IC202	272P937O20	IC	CXA1545AS
IC301	272P140O10	IC	LA4270
IC302	272P942O10	IC	TA8776N
IC3A0	270P188O10	IC	µPC1852ACT
IC401	272P949O10	IC	TA8427K
IC501	272P486O10	IC	µPC78M09H
IC502	266P922O10	IC	µPC78M05H
IC503	272P786O10	IC	µPC24M12HF
IC700	274P557O10	IC	M37266ME-A60SP [except 31303C]
IC700	274P557O30	IC	M37266ME-A62SP[31303C]
IC701	263D002O10	IC	24C02A
IC702	266P130O30	IC	PST520E
IC7001	270P187O10	IC	M52694P [31303,31303C,35303,35304]
IC7002	274P553O10	IC	M65607SP [31303,31303C,35303,35304]
IC7003	263P548O10	IC	HM53461ZP-12 [31303,31303C,35303,35304]
IC951	267P104O20	IC	STR-D4512 [31203,31203C,31303,31303C]
IC952	272P603O10	IC	NJM78L05A
IC953	266P931O10	IC	L78M09
IC954	272P601O10	IC	LM78M05CT [31303,31303C,35303,35304]
IC9A1	266P934O20	IC	µPC7812H [31203,31203C,31303,31303C]
IC9010	267P112O10	IC	STR-M6511[35303,35304]
IC9500	267P062O10	IC	SE130N[35303,35304]
IC9510	266P934O20	IC	µPC7812H[35303,35304]
		TRANSISTORS	
Q 101	260P560O40	TRANSISTOR	2SA933S-S
Q 102	260P560O40	TRANSISTOR	2SA933S-S
Q 103	260P559O30	TRANSISTOR	2SC1740S-S
Q 104	260P560O40	TRANSISTOR	2SA933S-S
Q 201	260P818O30	CHIP TRANSISTOR	2SC2412KS
Q 202	260P818O30	CHIP TRANSISTOR	2SC2412KS
Q 203	260P818O30	CHIP TRANSISTOR	2SC2412KS
Q 204	260P582O10	TRANSISTOR	2SK656
Q 206	260P818O30	CHIP TRANSISTOR	2SC2412KS
Q 207	260P818O30	CHIP TRANSISTOR	2SC2412KS
Q 208	260P817O30	CHIP TRANSISTOR	2SA1037K-S
Q 211	260P416O30	TRANSISTOR	2SC2274-F
Q 212	260P818O30	CHIP TRANSISTOR	2SC2412KS
Q 213	260P817O30	CHIP TRANSISTOR	2SA1037K-S
Q 301	260P632O10	TRANSISTOR	DTC124ES
Q 302	260P559O30	TRANSISTOR	2SC1740S-S
Q 303	260P559O30	TRANSISTOR	2SC1740S-S
Q 304	260P559O30	TRANSISTOR	2SC1740S-S
Q 306	260P560O40	TRANSISTOR	2SA933S-S
Q 311	260P817O30	CHIP TRANSISTOR	2SA1037K-S
Q 312	260P818O30	CHIP TRANSISTOR	2SC2412KS
Q 313	260P818O30	CHIP TRANSISTOR	2SC2412KS
Q 3A0	260P818O30	CHIP TRANSISTOR	2SC2412KS
Q 3A1	260P818O30	CHIP TRANSISTOR	2SC2412KS
Q 502	260P420O20	TRANSISTOR	2SC2073-B,C
Q 503	260P560O40	TRANSISTOR	2SA933S-S
Q 505	260P559O10	TRANSISTOR	2SC1740S-Q
Q 506	260P325O30	TRANSISTOR	2SC2655-Y
Q 510	260P560O40	TRANSISTOR	2SA933S-S
Q 520	260P560O40	TRANSISTOR	2SA933S-S
Q 521	260P559O30	TRANSISTOR	2SC1740S-S
Q 522	260P559O30	TRANSISTOR	2SC1740S-S
Q 531	260P325O30	TRANSISTOR	2SC2655-Y
Q 532	260P797O20	TRANSISTOR	2SD2349
Q 540	260P469O20	TRANSISTOR	2SA1320
Q 560	260P559O50	TRANSISTOR	2SC1740S-E
Q 5A1	260P817O30	CHIP TRANSISTOR	2SA1037K-S
Q 5300	260P664O30	TRANSISTOR	2SC4636[35303,35304]
Q 5301	260P664O30	TRANSISTOR	2SC4636[35303,35304]
Q 5302	260P338O50	TRANSISTOR	2SC2603-G[35303,35304]
Q 5303	260P254O10	TRANSISTOR	2SA1175-E[35303,35304]
Q 5304	260P338O60	TRANSISTOR	2SC2603-F,G[35303,35304]
Q 601	260P818O30	CHIP TRANSISTOR	2SC2412KS
Q 602	260P818O30	CHIP TRANSISTOR	2SC2412KS
Q 611	260P817O30	CHIP TRANSISTOR	2SA1037K-S
Q 651	260P571O10	TRANSISTOR	2SC3789-D,E
Q 652	260P571O10	TRANSISTOR	2SC3789-D,E
Q 653	260P571O10	TRANSISTOR	2SC3789-D,E
Q 654	260P559O30	TRANSISTOR	2SC1740S-S
Q 655	260P559O30	TRANSISTOR	2SC1740S-S
Q 656	260P559O30	TRANSISTOR	2SC1740S-S
Q 703	260P521O10	TRANSISTOR	2SC2878-B
Q 704	260P559O30	TRANSISTOR	2SC1740S-S
Q 707	260P559O30	TRANSISTOR	2SC1740S-S
Q 7A0	260P559O30	TRANSISTOR	2SC1740S-S
Q 7A5	260P559O30	TRANSISTOR	2SC1740S-S
Q 7A6	260P559O30	TRANSISTOR	2SC1740S-S
Q 7001	260P560O40	TRANSISTOR	2SA933S-S [31303,31303C,35303,35304]
Q 7002	260P560O40	TRANSISTOR	2SA933S-S [31303,31303C,35303,35304]
Q 7003	260P560O40	TRANSISTOR	2SA933S-S [31303,31303C,35303,35304]
Q 7004	260P560O40	TRANSISTOR	2SA933S-S [31303,31303C,35303,35304]
Q 7007	260P559O30	TRANSISTOR	2SC1740S-S [31303,31303C,35303,35304]
Q 8001	260P573O20	TRANSISTOR	2SB940A-P
Q 8002	260P574O20	TRANSISTOR	2SD1264A-P
Q 8003	260P559O50	TRANSISTOR	2SC1740S-E
Q 8004	260P560O40	TRANSISTOR	2SA933S-S
Q 8005	260P559O50	TRANSISTOR	2SC1740S-E
Q 8006	260P560O40	TRANSISTOR	2SA933S-S
Q 8007	260P560O40	TRANSISTOR	2SA933S-S

[31203] : CS-31203 [31203C] : CS-31203C [31303] : CS-31303 [31303C] : CS-31303C [35303] : CS-35303 [35304] : CK-35304

SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION
Q 8011	260P559O30	TRANSISTOR	2SC1740S-S
Q 951	260P325O30	TRANSISTOR	2SC2655-Y [31203,31203C,31303,31303C]
Q 952	260P560O40	TRANSISTOR	2SA933S-S
Q 953	260P416O30	TRANSISTOR	2SC2274-F
Q 954	260P560O40	TRANSISTOR	2SA933S-S[35303,35304]
Q 9010	260P422O10	TRANSISTOR	2SC2482[35303,35304]
Q 9020	260P560O40	TRANSISTOR	2SA933S-S[35303,35304]
Q 9030	260P560O40	TRANSISTOR	2SA933S-S[35303,35304]
Q 9040	260P422O10	TRANSISTOR	2SC2482[35303,35304]
Q 9500	260P559O50	TRANSISTOR	2SC1740S-E[35303,35304]
Q 9510	260P560O40	TRANSISTOR	2SA933S-S[35303,35304]
		DIODES	
D 101	264P470O40	DIODE	RD33EB1
D 201	264P485O60	DIODE	RD7.5FB2
D 202	264P485O60	DIODE	RD7.5FB2
D 207	264P485O60	DIODE	RD7.5FB2
D 211	264P045O40	DIODE	1S2471OM
D 301	264P045O40	DIODE	1S2471OM
D 302	264P045O40	DIODE	1S2471OM
D 303	264P045O40	DIODE	1S2471OM
D 304	264P045O40	DIODE	1S2471OM
D 305	264P045O40	DIODE	1S2471OM
D 312	264P045O40	DIODE	1S2471OM
D 313	264P825O10	DIODE	ERA15-02
D 420	264P045O40	DIODE	1S2471OM
D 443	264D056O20	DIODE	ERB12-02RK
D 457	264D056O20	DIODE	ERB12-02RK
D 466	264P825O10	DIODE	ERA15-02
D 503	264P825O10	DIODE	ERA15-02
D 525	264P488O40	DIODE	RD13FB3 [31203,31203C,31303,31303C]
D 525	264P486O60	DIODE	RD9.1FB3[35303,35304]
D 526	264P045O40	DIODE	1S2471OM
D 531	264P295O20	DIODE	ES 1C
D 532	264P358O40	DIODE	RU 4A [31203,31203C,31303,31303C]
D 537	264P533O30	DIODE	RS 4FS
D 538	264P358O70	DIODE	RU 4AM
D 540	264P295O20	DIODE	ES 1C [31203,31203C,31303,31303C]
D 541	264D056O20	DIODE	ERB12-02RK
D 545	264P045O40	DIODE	1S2471OM
D 550	264P295O20	DIODE	ES 1C
D 551	264D056O20	DIODE	ERB12-02RK
D 554	264P295O20	DIODE	ES 1C
D 560	264P492O40	DIODE	RD33FB3
D 563	264P102O20	DIODE	RU 3B [31203,31203C,31303,31303C]
D 580	264P244O20	DIODE	HZT33-10
D 5A1	264P484O70	DIODE	RD6.2FB2
D 5A2	264P502O20	DIODE	HZ5BLL
D 5A3	264P502O20	DIODE	HZ5BLL
D 5A4	264P425O10	DIODE	ISS88
D 5A5	264P825O10	DIODE	ERA15-02
D 5A6	264P045O40	DIODE	1S2471OM
D 5300	264P045O40	DIODE	1S2471OM[35303,35304]
D 5301	264P045O40	DIODE	1S2471OM[35303,35304]
D 5302	264P488O20	DIODE	RD13FB1[35303,35304]
D 5305	264P045O40	DIODE	1S2471OM[35303,35304]
D 5306	264P528O30	DIODE	RP 1H[35303,35304]
D 5307	264P528O30	DIODE	RP 1H[35303,35304]
D 5310	264P543O10	DIODE	EG01[35303,35304]
D 5311	264P045O40	DIODE	1S2471OM[35303,35304]
D 5312	264P045O40	DIODE	1S2471OM[35303,35304]
D 601	264P485O60	DIODE	RD7.5FB2
D 606	264P045O40	DIODE	1S2471OM
D 607	264P045O40	DIODE	1S2471OM
D 608	264P045O40	DIODE	1S2471OM
D 609	264P825O10	DIODE	ERA15-02
D 612	264P045O40	DIODE	1S2471OM
D 700	264P485O60	DIODE	RD7.5FB2
D 701	264P485O60	DIODE	RD7.5FB2
D 702	264P485O60	DIODE	RD7.5FB2
D 703	264P485O60	DIODE	RD7.5FB2
D 704	264P485O60	DIODE	RD7.5FB2
D 705	264P485O60	DIODE	RD7.5FB2
D 706	264P485O60	DIODE	RD7.5FB2
D 707	264P485O60	DIODE	RD7.5FB2
D 708	264P485O60	DIODE	RD7.5FB2
D 709	264P484O20	DIODE	RD5.6FB1
D 710	264P484O20	DIODE	RD5.6FB1
D 711	264P485O60	DIODE	RD7.5FB2
D 717	264P485O60	DIODE	RD7.5FB2
D 718	264P485O60	DIODE	RD7.5FB2
D 719	264P485O60	DIODE	RD7.5FB2
D 720	264P485O60	DIODE	RD7.5FB2
D 721	264P485O60	DIODE	RD7.5FB2
D 722	264P485O60	DIODE	RD7.5FB2
D 724	264P045O40	DIODE	1S2471OM
D 725	264P045O40	DIODE	1S2471OM
D 726	264P825O10	DIODE	ERA15-02
D 727	264P825O10	DIODE	ERA15-02
D 728	264P825O10	DIODE	ERA15-02
D 729	264P825O10	DIODE	ERA15-02
D 730	264P825O10	DIODE	ERA15-02
D 738	264P825O10	DIODE	ERA15-02
D 744	264P485O60	DIODE	RD7.5FB2
D 745	264P485O60	DIODE	RD7.5FB2
D 746	264P485O60	DIODE	RD7.5FB2
D 747	264P485O60	DIODE	RD7.5FB2
D 748	264P485O60	DIODE	RD7.5FB2
D 750	264P485O60	DIODE	RD7.5FB2
D 751	264P485O60	DIODE	RD7.5FB2 [31203,31203C,31303,31303C]
D 7A0	264P485O60	DIODE	RD7.5FB2
D 7A1	264P485O60	DIODE	RD7.5FB2
D 7A2	264P045O40	DIODE	1S2471OM
D 7A3	264P045O40	DIODE	1S2471OM
D 7A4	264P485O60	DIODE	RD7.5FB2
D 7001	264P045O40	DIODE	1S2471OM [31303,31303C,35303,35304]
D 7002	264P045O40	DIODE	1S2471OM [31303,31303C,35303,35304]

[31203] : CS-31203 [31203C] : CS-31203C [31303] : CS-31303 [31303C] : CS-31303C [35303] : CS-35303 [35304] : CK-35304

SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION
D 7600	264P225O20	LIGHT EMITTING DIODE	LN35GP[except 35304]
D 7600	264P203O20	LIGHT EMITTING DIODE	TLG124A-E[35304]
D 7601	264P488O20	DIODE	RD13FB1[35303,35304]
D 8001	264P045O40	DIODE	1S2471OM
D 8002	264P045O40	DIODE	1S2471OM
D 8003	264D056O20	DIODE	ERB12-02RK
D 8004	264D056O20	DIODE	ERB12-02RK
D 8005	264P045O40	DIODE	1S2471OM
D 8006	264P045O40	DIODE	1S2471OM
D 8007	264P045O40	DIODE	1S2471OM
D 8011	264P295O20	DIODE	ES 1C [31203,31203C,31303,31303C]
D 951	264P147O10	DIODE	RM 2C [31203,31203C,31303,31303C]
D 952	264P147O10	DIODE	RM 2C [31203,31203C,31303,31303C]
D 953	264P295O20	DIODE	ES 1C [31203,31203C,31303,31303C]
D 954	264P295O20	DIODE	ES 1C [31203,31203C,31303,31303C]
D 955	264P295O40	DIODE	ES 1A [31203,31203C,31303,31303C]
D 956	264P358O70	DIODE	RU 4AM [31203,31203C,31303,31303C]
D 959	264P102O40	DIODE	RU 3M [31203,31203C,31303,31303C]
D 960	264P102O20	DIODE	RU 3B [31203,31203C,31303,31303C]
D 967	264P825O10	DIODE	ERA15-02
D 968	264P825O10	DIODE	ERA15-02
D 970	264P045O40	DIODE	1S2471OM
D 971	264P825O10	DIODE	ERA15-02[35303,35304]
D 972	264D056O20	DIODE	ERB12-02RK [31203,31203C,31303,31303C]
D 974	264P045O40	DIODE	1S2471OM
D 978	264P825O10	DIODE	ERA15-02
D 9A1	264P508O10	DIODE	S1WB(A)10 [31203,31203C,31303,31303C]
D 9A3	264D056O20	DIODE	ERB12-02RK [31203,31203C,31303,31303C]
D 9A4	264D056O20	DIODE	ERB12-02RK [31203,31203C,31303,31303C]
D 9010	264P535O10	DIODE	RBV-608[35303,35304]
D 9020	264P622O10	DIODE	AL01Z[35303,35304]
D 9030	264P101O50	DIODE	RM 1B[35303,35304]
D 9040	264P622O10	DIODE	AL01Z[35303,35304]
D 9050	264P622O10	DIODE	AL01Z[35303,35304]
D 9060	264P488O20	DIODE	RD13FB1[35303,35304]
D 9070	264P102O20	DIODE	RU 3B[35303,35304]
D 9080	264P457O50	DIODE	RD3.0EB1[35303,35304]
D 9090	264P622O10	DIODE	AL01Z[35303,35304]
D 9500	264P508O10	DIODE	S1WB(A)10[35303,35304]
D 9540	264P825O10	DIODE	ERA15-02[35303,35304]
D 9550	264P588O10	DIODE	FML-G16S[35303,35304]
D 9560	264P578O10	DIODE	RG 2A[35303,35304]
D 9570	264P566O10	DIODE	FMP-G12S[35303,35304]
D 9580	264P566O10	DIODE	FMP-G12S[35303,35304]
D 9600	264P045O40	DIODE	1S2471OM[35303,35304]
D 9610	264P045O40	DIODE	1S2471OM[35303,35304]
D 9620	264P045O40	DIODE	1S2471OM[35303,35304]
		OTHER SEMICONDUCTORS	
RP9A1	265P071O40	POSITIVE THERMISTOR	<C5R0M> [31203,31203C,31303,31303C]
RP9010	265P071O40	POSITIVE THERMISTOR	<C5R0M>[35303,35304]
		FILTERS	
CF5A1	299P154O20	CERAMIC RESONATOR	CSB503F38
		DELAY LINES	
DL201	337P142O50	DELAY LINE	
DL202	337P096O70	DELAY LINE	
		COILS	
	409B091O60	DEGAUSSING COIL	[31203,31203C,31303,31303C]
	409B122O10	DEGAUSSING COIL	[35303,35304]
	330P181O40	DEFLECTION YOKE COIL	[35304]
L 101	325C120O90	PEAKING COIL	4.7µH-K
L 102	325C112O50	PEAKING COIL	100µH-K
L 103	321C010O80	RF COIL	2200µH-J
L 105	321C031O40	RF COIL	10µH-K
L 201	325C261O30	PEAKING COIL	10µH-K
L 202	325C261O30	PEAKING COIL	10µH-K
L 203	325C261O50	PEAKING COIL	15µH-K SO
L 204	321C011O40	RF COIL	6800µH-J
L 451	321C130O10	RF COIL	2.0MH +-15%
L 510	409P006O80	FILTER COIL	6800µH-J
L 512	333P028O10	H-LIN.COIL	[except 35303]
L 512	333P028O40	H-LIN.COIL	[35303]
L 530	335P012O10	CHOKE COIL	250MHz
L 553	411D009O20	FERRITE CORE FILTER	
L 570	409P509O10	FILTER COIL	180µH-K [31203,31203C,31303,31303C]
L 5300	409P006O80	FILTER COIL	6800µH-J[35303,35304]
L 601	325C101O30	PEAKING COIL	10µH-K
L 651	325C302O30	PEAKING COIL	68µH-K
L 652	325C302O30	PEAKING COIL	68µH-K
L 653	325C302O30	PEAKING COIL	68µH-K
L 654	325C301O80	PEAKING COIL	27µH-K
L 655	325C301O80	PEAKING COIL	27µH-K
L 656	325C301O80	PEAKING COIL	27µH-K
L 657	325C111O50	PEAKING COIL	15µH-K
L 700	325C121O30	PEAKING COIL	10µH-K
L 7A0	325C121O30	PEAKING COIL	10µH-K
L 7A1	325C121O30	PEAKING COIL	10µH-K
L 7A2	325C120O70	PEAKING COIL	3.3µH-K[35303,35304]
L 7F1	325C121O30	PEAKING COIL	10µH-K
L 7001	325C121O30	PEAKING COIL	10µH-K [31303,31303C,35303,35304]
L 7002	325C121O30	PEAKING COIL	10µH-K [31303,31303C,35303,35304]
L 7003	325C121O30	PEAKING COIL	10µH-K [31303,31303C,35303,35304]
L 7004	325C121O30	PEAKING COIL	10µH-K [31303,31303C,35303,35304]

[31203] : CS-31203 [31203C] : CS-31203C [31303] : CS-31303 [31303C] : CS-31303C [35303] : CS-35303 [35304] : CK-35304

SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION
L 7006	325C121O30	PEAKING COIL	10μH-K [31303,31303C,35303,35304]
L 7600	325C121O30	PEAKING COIL	10μH-K
L 7601	325C121O30	PEAKING COIL	10μH-K
L 7602	325C121O30	PEAKING COIL	10μH-K[35303,35304]
L 7603	325C121O30	PEAKING COIL	10μH-K [31203,31203C,31303,31303C]
L 8001	411D009O20	FERRITE CORE FILTER	
L 8002	325C121O90	PEAKING COIL	33μH-K
L 951	351P069O10	FILTER COIL	SBC-9-680-152 [31203,31203C,31303,31303C]
L 9A1	351P090O10	LINE FILTER	[31203,31203C,31303,31303C]
L 9A2	351P090O10	LINE FILTER	[31203,31203C,31303,31303C]
L 9010	351P090O10	LINE FILTER	[35303,35304]
L 9020	351P090O10	LINE FILTER	[35303,35304]
L 9030	411P012O30	BEAD FERRITE	[35303,35304]
L 9040	411P011O10	BEAD FERRITE	ZBF503S-P[35303,35304]
L 9050	411D009O20	FERRITE CORE FILTER	[35303,35304]
L 9500	321D019O10	RF COIL	0.47μH-K[35303,35304]
L 9510	409P674O20	FILTER COIL	[35303,35304]
L 9520	321C131O60	RF COIL	33MH +-7.5%[35303,35304]
L 9530	409P794O10	FILTER COIL	33MH +-20%[35303,35304]
L 9540	409P674O20	FILTER COIL	[35303,35304]
L 9550	411P001O40	LEAD FERRITE	[35303,35304]
LC7001	409P402O30	EMI FILTER	FZ103N100 [31303,31303C,35303,35304]
LC7002	409P402O10	EMI FILTER	B101M100 [31303,31303C,35303,35304]
LC7003	409P402O10	EMI FILTER	B101M100 [31303,31303C,35303,35304]
LC7004	409P402O10	EMI FILTER	B101M100 [31303,31303C,35303,35304]
LC7005	409P402O10	EMI FILTER	B101M100 [31303,31303C,35303,35304]
LC7006	409P402O10	EMI FILTER	B101M100 [31303,31303C,35303,35304]
		TRANSFORMERS	
BF601	349P159O70	CHROMA-BP	
T 531	336P012O40	H.DRIVE	TH7131T
T 551	334D100005	FLYBACK	(334P231O10+) [31203,31203C,31303,31303C]
T 551	334P214O90	FLYBACK	[35303]
T 551	334P214O10	FLYBACK	[35304]
T 552	349P122O50	SIDE PCC	[35303,35304]
T 951	350P608O20	POWER	[31203,31203C,31303,31303C]
T 9A1	350P417O60	POWER	[31203,31203C,31303,31303C]
T 9010	350P504O60	POWER	[35303,35304]
T 9020	350P417O60	POWER	[35303,35304]
		VARIABLE RESISTORS	
VR	129P064O10	VR-FOCUS	MHF111-09[35303]
		RESISTORS	
R 201	103P401O30	CHIP RESISTOR	1/10W 100Ω-J
R 202	103P402O50	CHIP RESISTOR	1/10W 1KΩ-J
R 203	103P402O50	CHIP RESISTOR	1/10W 1KΩ-J
R 204	103P402O50	CHIP RESISTOR	1/10W 1KΩ-J
R 206	103P402O50	CHIP RESISTOR	1/10W 1KΩ-J
R 207	103P403O60	CHIP RESISTOR	1/10W 8.2KΩ-J
R 208	103P404O30	CHIP RESISTOR	1/10W 33KΩ-J
R 209	103P401O30	CHIP RESISTOR	1/10W 100Ω-J
R 210	103P402O60	CHIP RESISTOR	1/10W 1.2KΩ-J
R 212	103P402O50	CHIP RESISTOR	1/10W 1KΩ-J
R 213	103P401O70	CHIP RESISTOR	1/10W 220Ω-J
R 214	103P405O20	CHIP RESISTOR	1/10W 180KΩ-J
R 215	103P406O10	CHIP RESISTOR	1/10W 1MΩ-J
R 216	103P404O60	CHIP RESISTOR	1/10W 56KΩ-J
R 217	103P403O00	CHIP RESISTOR	1/10W 2.7KΩ-J
R 218	103P403O60	CHIP RESISTOR	1/10W 8.2KΩ-J
R 221	103P402O10	CHIP RESISTOR	1/10W 470Ω-J
R 223	103P401O30	CHIP RESISTOR	1/10W 100Ω-J
R 231	103P409O90	CHIP RESISTOR	1/10W 75Ω-J
R 232	103P409O90	CHIP RESISTOR	1/10W 75Ω-J
R 234	103P403O70	CHIP RESISTOR	1/10W 10KΩ-J
R 241	103P401O30	CHIP RESISTOR	1/10W 100Ω-J
R 242	103P401O30	CHIP RESISTOR	1/10W 100Ω-J
R 243	103P401O30	CHIP RESISTOR	1/10W 100Ω-J [31303,31303C,35303,35304]
R 245	103P401O70	CHIP RESISTOR	1/10W 220Ω-J
R 247	103P409O90	CHIP RESISTOR	1/10W 75Ω-J
R 254	103P401O30	CHIP RESISTOR	1/10W 100Ω-J[35303,35304]
R 255	103P401O30	CHIP RESISTOR	1/10W 100Ω-J
R 256	103P401O30	CHIP RESISTOR	1/10W 100Ω-J
R 263	103P404O60	CHIP RESISTOR	1/10W 56KΩ-J
R 264	103P404O20	CHIP RESISTOR	1/10W 27KΩ-J
R 265	103P401O30	CHIP RESISTOR	1/10W 100Ω-J
R 266	103P403O10	CHIP RESISTOR	1/10W 3.3KΩ-J
R 267	103P401O80	CHIP RESISTOR	1/10W 270Ω-J
R 268	103P401O90	CHIP RESISTOR	1/10W 330Ω-J
R 269	103P400O90	CHIP RESISTOR	1/10W 47Ω-J
R 270	103P405O40	CHIP RESISTOR	1/10W 270KΩ-J
R 271	103P403O70	CHIP RESISTOR	1/10W 10KΩ-J
R 272	103P401O30	CHIP RESISTOR	1/10W 100Ω-J
R 273	103P402O90	CHIP RESISTOR	1/10W 2.2KΩ-J
R 274	103P404O20	CHIP RESISTOR	1/10W 27KΩ-J
R 275	103P405O60	CHIP RESISTOR	1/10W 390KΩ-J
R 276	103P401O70	CHIP RESISTOR	1/10W 220Ω-J
R 277	103P402O10	CHIP RESISTOR	1/10W 470Ω-J
R 278	103P401O30	CHIP RESISTOR	1/10W 100Ω-J
R 279	103P403O30	CHIP RESISTOR	1/10W 4.7KΩ-J
R 280	103P405O70	CHIP RESISTOR	1/10W 470KΩ-J
R 281	103P404O20	CHIP RESISTOR	1/10W 27KΩ-J
R 322	103P404O50	CHIP RESISTOR	1/10W 47KΩ-J
R 323	103P404O10	CHIP RESISTOR	1/10W 22KΩ-J
R 324	103P403O70	CHIP RESISTOR	1/10W 10KΩ-J
R 325	103P404O90	CHIP RESISTOR	1/10W 100KΩ-J
R 326	103P403O70	CHIP RESISTOR	1/10W 10KΩ-J
R 327	103P404O90	CHIP RESISTOR	1/10W 100KΩ-J
R 331	103P409O50	CHIP RESISTOR	1/10W 0Ω
R 332	103P409O50	CHIP RESISTOR	1/10W 0Ω
R 333	103P405O60	CHIP RESISTOR	1/10W 390KΩ-J
R 334	103P402O50	CHIP RESISTOR	1/10W 1KΩ-J
R 337	103P409O50	CHIP RESISTOR	1/10W 0Ω[35303,35304]
R 338	103P402O50	CHIP RESISTOR	1/10W 1KΩ-J

[31203] : CS-31203 [31203C] : CS-31203C [31303] : CS-31303 [31303C] : CS-31303C [35303] : CS-35303 [35304] : CK-35304

SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION
R 351	103P402O90	CHIP RESISTOR	1/10W 2.2KΩ-J
R 352	103P402O80	CHIP RESISTOR	1/10W 1.8KΩ-J
R 353	103P401O30	CHIP RESISTOR	1/10W 100Ω-J
R 354	103P401O30	CHIP RESISTOR	1/10W 100Ω-J
R 355	103P409O50	CHIP RESISTOR	1/10W 0Ω
R 361	103P402O50	CHIP RESISTOR	1/10W 1KΩ-J
R 362	103P402O50	CHIP RESISTOR	1/10W 1KΩ-J
R 367	103P402O50	CHIP RESISTOR	1/10W 1KΩ-J
R 368	103P402O50	CHIP RESISTOR	1/10W 1KΩ-J
R 369	103P402O50	CHIP RESISTOR	1/10W 1KΩ-J
R 370	103P402O50	CHIP RESISTOR	1/10W 1KΩ-J
R 371	103P401O30	CHIP RESISTOR	1/10W 100Ω-J[35303,35304]
R 372	103P401O30	CHIP RESISTOR	1/10W 100Ω-J[35303,35304]
R 373	103P405O40	CHIP RESISTOR	1/10W 270KΩ-J
R 374	103P405O40	CHIP RESISTOR	1/10W 270KΩ-J
R 377	103P404O90	CHIP RESISTOR	1/10W 100KΩ-J
R 378	103P404O90	CHIP RESISTOR	1/10W 100KΩ-J
R 3A0	103P402O50	CHIP RESISTOR	1/10W 1KΩ-J
R 3A1	103P404O70	CHIP RESISTOR	1/10W 68KΩ-J
R 3A2	103P401O30	CHIP RESISTOR	1/10W 100Ω-J
R 3A3	103P401O30	CHIP RESISTOR	1/10W 100Ω-J
R 3A4	103P473O60	CHIP RESISTOR	1/10W 3K-F
R 3A5	103P474O20	CHIP RESISTOR	1/10W 5.1K-F
R 3A6	103P475O30	CHIP RESISTOR	1/10W 15K-F
R 3A7	103P402O50	CHIP RESISTOR	1/10W 1KΩ-J
R 3A8	103P402O50	CHIP RESISTOR	1/10W 1KΩ-J
R 3A9	103P402O50	CHIP RESISTOR	1/10W 1KΩ-J
R 3B0	103P402O50	CHIP RESISTOR	1/10W 1KΩ-J[except 31303]
R 3B1	103P473O00	CHIP RESISTOR	1/10W 1.6K-F
R 3B2	103P403O70	CHIP RESISTOR	1/10W 10KΩ-J
R 3B3	103P403O70	CHIP RESISTOR	1/10W 10KΩ-J
R 4A1	103P401O30	CHIP RESISTOR	1/10W 100Ω-J
R 4A2	103P405O50	CHIP RESISTOR	1/10W 330KΩ-J
R 4A3	103P401O70	CHIP RESISTOR	1/10W 220Ω-J
R 4A4	103P401O70	CHIP RESISTOR	1/10W 220Ω-J
R 4A5	103P401O70	CHIP RESISTOR	1/10W 220Ω-J
R 500	103P398O60	FUSE	1/2W 3.3Ω-J
R 536	103P338O10	R-CARBON	1/4W 1.2Ω-J
R 538	103P338O10	R-CARBON	1/4W 1.2Ω-J
R 540	103P377O70	FUSE	1/4W 0.56Ω-K [31203,31203C,31303,31303C]
R 542	103P377O70	FUSE	1/4W 0.56Ω-K [31203,31203C,31303,31303C]
R 544	109D067O70	CEMENT WIRE	10W 2.7Ω-K
R 561	103P451O80	FUSE	2W 270Ω-K/J
R 570	103P397O90	FUSE	1/2W 0.82Ω-J [31203,31203C,31303,31303C]
R 5A2	103P409O50	CHIP RESISTOR	1/10W 0Ω
R 5A3	103P401O70	CHIP RESISTOR	1/10W 220Ω-J
R 5A4	103P409O50	CHIP RESISTOR	1/10W 0Ω
R 5A5	103P403O70	CHIP RESISTOR	1/10W 10KΩ-J
R 5A7	103P401O30	CHIP RESISTOR	1/10W 100Ω-J
R 5A8	103P401O30	CHIP RESISTOR	1/10W 100Ω-J
R 5A9	103P403O30	CHIP RESISTOR	1/10W 4.7KΩ-J
R 5B1	103P403O30	CHIP RESISTOR	1/10W 4.7KΩ-J
R 5B2	103P401O70	CHIP RESISTOR	1/10W 220Ω-J
R 5B3	103P401O70	CHIP RESISTOR	1/10W 220Ω-J
R 5B4	103P404O90	CHIP RESISTOR	1/10W 100KΩ-J

SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION
R 5B5	103P404O00	CHIP RESISTOR	1/10W 18KΩ-J
R 5B6	103P403O10	CHIP RESISTOR	1/10W 3.3KΩ-J
R 5B7	103P401O30	CHIP RESISTOR	1/10W 100Ω-J
R 5B8	103P401O30	CHIP RESISTOR	1/10W 100Ω-J
R 5B9	103P406O10	CHIP RESISTOR	1/10W 1MΩ-J
R 5C1	103P403O70	CHIP RESISTOR	1/10W 10KΩ-J
R 5C3	103P403O60	CHIP RESISTOR	1/10W 8.2KΩ-J
R 5C4	103P402O90	CHIP RESISTOR	1/10W 2.2KΩ-J
R 5C7	103P405O10	CHIP RESISTOR	1/10W 150KΩ-J
R 5338	103P371O00	FUSE	1/4W 56Ω-J[35303,35304]
R 5352	103P398O80	FUSE	1/2W 4.7Ω-J[35303,35304]
R 5355	103P392O50	FUSE	1/2W 1KΩ-J[35303,35304]
R 5356	103P392O20	FUSE	1/2W 560Ω-J[35303,35304]
R 601	103P401O90	CHIP RESISTOR	1/10W 330Ω-J
R 602	103P401O90	CHIP RESISTOR	1/10W 330Ω-J
R 603	103P401O90	CHIP RESISTOR	1/10W 330Ω-J
R 604	103P402O80	CHIP RESISTOR	1/10W 1.8KΩ-J
R 605	103P402O80	CHIP RESISTOR	1/10W 1.8KΩ-J
R 606	103P402O80	CHIP RESISTOR	1/10W 1.8KΩ-J
R 607	103P402O70	CHIP RESISTOR	1/10W 1.5KΩ-J
R 608	103P402O50	CHIP RESISTOR	1/10W 1KΩ-J
R 609	103P401O90	CHIP RESISTOR	1/10W 330Ω-J
R 610	103P401O90	CHIP RESISTOR	1/10W 330Ω-J
R 611	103P401O90	CHIP RESISTOR	1/10W 330Ω-J
R 612	103P402O90	CHIP RESISTOR	1/10W 2.2KΩ-J
R 613	103P402O90	CHIP RESISTOR	1/10W 2.2KΩ-J
R 614	103P402O90	CHIP RESISTOR	1/10W 2.2KΩ-J
R 615	103P403O10	CHIP RESISTOR	1/10W 3.3KΩ-J
R 616	103P403O10	CHIP RESISTOR	1/10W 3.3KΩ-J
R 617	103P404O10	CHIP RESISTOR	1/10W 22KΩ-J
R 618	103P404O10	CHIP RESISTOR	1/10W 22KΩ-J
R 621	103P401O70	CHIP RESISTOR	1/10W 220Ω-J
R 623	103P402O70	CHIP RESISTOR	1/10W 1.5KΩ-J
R 624	103P409O50	CHIP RESISTOR	1/10W 0Ω
R 631	103P409O90	CHIP RESISTOR	1/10W 75Ω-J
R 634	103P401O30	CHIP RESISTOR	1/10W 100Ω-J
R 635	103P402O50	CHIP RESISTOR	1/10W 1KΩ-J
R 636	103P403O70	CHIP RESISTOR	1/10W 10KΩ-J
R 640	103P404O60	CHIP RESISTOR	1/10W 56KΩ-J
R 641	103P404O20	CHIP RESISTOR	1/10W 27KΩ-J
R 642	103P402O50	CHIP RESISTOR	1/10W 1KΩ-J
R 643	103P402O10	CHIP RESISTOR	1/10W 470Ω-J
R 644	103P402O90	CHIP RESISTOR	1/10W 2.2KΩ-J
R 648	103P404O10	CHIP RESISTOR	1/10W 22KΩ-J
R 649	103P404O30	CHIP RESISTOR	1/10W 33KΩ-J
R 660	103P437O60	FUSE METAL	2W 0.47Ω-K/J [31203,31203C,31303,31303C]
R 660	103P438O20	FUSE METAL	2W 1.5Ω-J[35303]
R 660	103P438O50	FUSE METAL	2W 2.7Ω-K/J[35304]
R 661	103P438O10	FUSE METAL	2W 1.2Ω-K/J[35303]
R 712	103P744O10	NETWORK	1/8W 22KΩ-JX4
R 720	103P743O50	NETWORK	1/8W 6.8KΩ-JX4 [31203,31203C,31303,31303C]
R 720	103P744O10	NETWORK	1/8W 22KΩ-JX4[35303,35304]
R 755	103P744O10	NETWORK	1/8W 22KΩ-JX4
R 7024	103P544O10	NETWORK	1/8W 22KΩ-JX4 [31303,31303C,35303,35304]

[31203] : CS-31203 [31203C] : CS-31203C [31303] : CS-31303 [31303C] : CS-31303C [35303] : CS-35303 [35304] : CK-35304

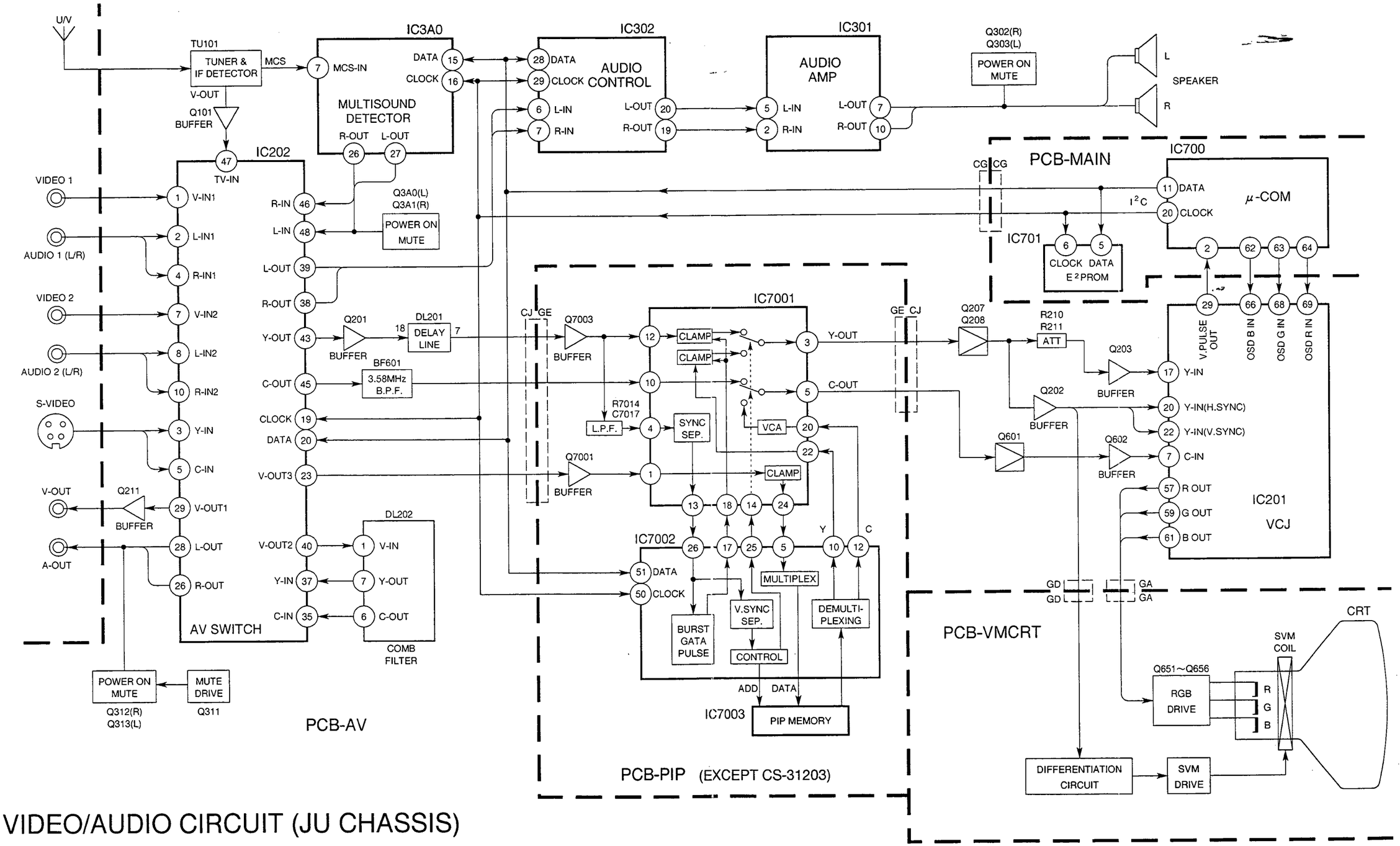
SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION
R 8014	103P370O10	FUSE	1/4W 10Ω-J
R 8015	103P370O50	FUSE	1/4W 22Ω-J
R 8016	103P370O10	FUSE	1/4W 10Ω-J
R 8045	103P378O00	FUSE	1/4W 1.0Ω-J
R 975	103P391O40	FUSE	1/2W 120Ω-J[35303,35304]
R 9A2	109D132O50	CEMENT WIRE	20W 2.2Ω-K [31203,31203C,31303,31303C]
R 9030	102P107O30	WIRE	2W 0.27Ω-K[35303,35304]
R 9040	102P107O40	WIRE	2W 0.33Ω-K[35303,35304]
R 9050	102P107O30	WIRE	2W 0.27Ω-K[35303,35304]
R 9060	109D132O50	CEMENT WIRE	20W 2.2Ω-K[35303,35304]
R 9590	103P397O90	FUSE	1/2W 0.82Ω-J[35303,35304]
RJ 01	103P409O50	CHIP RESISTOR	1/10W 0Ω
RJ 03	103P409O50	CHIP RESISTOR	1/10W 0Ω[31203,31203C]
RJ 04	103P409O50	CHIP RESISTOR	1/10W 0Ω
RJ 05	103P409O50	CHIP RESISTOR	1/10W 0Ω
RJ 08	103P409O50	CHIP RESISTOR	1/10W 0Ω
RJ 11	103P409O50	CHIP RESISTOR	1/10W 0Ω[31203,31203C]
RJ 12	103P409O50	CHIP RESISTOR	1/10W 0Ω[31203,31203C]
		CAPACITORS AND TRIMMERS	
C 205	141P132O10	CHIP CAPACITOR	B50V 0.01μF-K
C 222	141P132O10	CHIP CAPACITOR	B50V 0.01μF-K
C 332	141P132O10	CHIP CAPACITOR	B50V 0.01μF-K
C 3A8	141P137O80	CHIP CAPACITOR	B25V 0.047M
C 3B4	189D058O30	C-TANT	16V 3.3μF-K
C 3B5	189D028O10	C-TANT	16V 10μF-K
C 453	189D028O60	C-TANT	35V 2.2μF-K
C 544	172P171O30	C-M-PP	1600V 0.01μF-J
C 545	172P171O30	C-M-PP	1600V 0.01μF-J
C 570	189P077O90	C-M-PP	400V 0.18μF-J [31203,31203C,31303,31303C]
C 570	189P077O20	C-M-PP	400V 0.27μF-J[35303,35304]
C 571	189P077O20	C-M-PP	400V 0.27μF-J[except 35303]
C 571	189P077O30	C-M-PP	400V 0.33μF-J[35303]
C 5A1	154P334O30	CHIP CAPACITOR	CH50V220pF-J
C 5B3	141P131O30	CHIP CAPACITOR	B50V 2200pF-K [31203,31203C,31303,31303C]
C 5B3	141P131O60	CHIP CAPACITOR	B50V 3900pF-K[35303,35304]
C 5B4	141P131O50	CHIP CAPACITOR	B50V 3300pF-K [31203,31203C,31303,31303C]
C 5B4	141P131O80	CHIP CAPACITOR	B50V 5600pF-K[35303,35304]
C 5311	172P170O50	C-M-PP	1600V 2200pF-J[35303,35304]
C 601	141P132O10	CHIP CAPACITOR	B50V 0.01μF-K
C 608	154P322O00	CHIP CAPACITOR	SL50V 22pF-J
C 612	154P331O50	CHIP CAPACITOR	CH50V 15pF-J
C 614	141P132O10	CHIP CAPACITOR	B50V 0.01μF-K
C 616	154P321O80	CHIP CAPACITOR	SL50V 18pF-J
C 617	141P132O10	CHIP CAPACITOR	B50V 0.01μF-K
C 618	141P131O30	CHIP CAPACITOR	B50V 2200P-K
C 620	141P132O10	CHIP CAPACITOR	B50V 0.01μF-K
C 621	154P323O80	CHIP CAPACITOR	SL50V 120pF-J
C 622	141P132O10	CHIP CAPACITOR	B50V 0.01μF-K
C 623	154P323O60	CHIP CAPACITOR	SL50V 100pF-J
C 624	141P132O10	CHIP CAPACITOR	B50V 0.01μF-K [31303,31303C,35303,35304]
C 630	141P132O10	CHIP CAPACITOR	B50V 0.01μF-K
C 640	141P132O10	CHIP CAPACITOR	B50V 0.01μF-K
C 950	189P060O60	CERAMIC CAPACITOR	E AC250V 2200pF-Z [31203,31203C,31303,31303C]
C 951	189P060O60	CERAMIC CAPACITOR	E AC250V 2200pF-Z [31203,31203C,31303,31303C]
C 952	185D057O60	ELECTROLYTIC-C	180V 820μF-Q [31203,31203C,31303,31303C]
C 953	185D057O60	ELECTROLYTIC-C	180V 820μF-Q [31203,31203C,31303,31303C]
C 961	185D058O40	ELECTROLYTIC-C	H160V 220μF-M [31203,31203C,31303,31303C]
C 980	189P033O60	C-PP-AC	AC125V 0.01μF-M [31203,31203C,31303,31303C]
C 981	189P033O80	C-PP-AC	AC125 0.022μF-M [31203,31203C,31303,31303C]
C 9A1	189P033O50	C-PP-AC	AC125V 0.1μF-M [31203,31203C,31303,31303C]
C 9A2	189P033O50	C-PP-AC	AC125V 0.1μF-M [31203,31203C,31303,31303C]
C 9010	189P033O50	C-PP-AC	AC125V 0.1μF-M[35303,35304]
C 9020	189P033O50	C-PP-AC	AC125V 0.1μF-M[35303,35304]
C 9030	189P033O50	C-PP-AC	AC125V 0.1μF-M[35303,35304]
C 9050	189P060O60	CERAMIC CAPACITOR	E AC250V 2200pF-Z [35303,35304]
C 9060	189P060O60	CERAMIC CAPACITOR	E AC250V 2200pF-Z [35303,35304]
C 9070	185D057O60	ELECTROLYTIC-C	180V 820μF-Q[35303,35304]
C 9130	189P033O60	C-PP-AC	AC125V 0.01μF-M[35303,35304]
C 9140	189P033O80	C-PP-AC	AC125 0.022μF-M[35303,35304]
C 9550	185D055O30	ELECTROLYTIC-C	H160V 820μF-M[35303,35304]
C 9590	185D065O30	ELECTROLYTIC-C	H35V 4700μF-M 105C [35303,35304]
C 9630	185D065O30	ELECTROLYTIC-C	H35V 4700μF-M 105C [35303,35304]
CR971	149P008O10	CR-MULTIPLE	470PF&3.6μF-K
VC7001	202P109O30	TRIMMER CAPACITOR	5.5pF-30pF [31303,31303C,35303,35304]
		SWITCHES	
S 550	431C059O20	SLIDE SWITCH	2-3
S 7600	432P066O70	KEY BOARD SWITCH	1-1 L=8.35 T[except 35304]
S 7600	432P100O10	KEY BOARD SWITCH	1-1 H=4.3[35304]
S 7601	432P066O70	KEY BOARD SWITCH	1-1 L=8.35 T[except 35304]
S 7601	432P100O10	KEY BOARD SWITCH	1-1 H=4.3[35304]
S 7602	432P066O70	KEY BOARD SWITCH	1-1 L=8.35 T[except 35304]
S 7602	432P100O10	KEY BOARD SWITCH	1-1 H=4.3[35304]
S 7603	432P066O70	KEY BOARD SWITCH	1-1 L=8.35 T[except 35304]
S 7603	432P100O10	KEY BOARD SWITCH	1-1 H=4.3[35304]
S 7604	432P066O70	KEY BOARD SWITCH	1-1 L=8.35 T[except 35304]
S 7604	432P100O10	KEY BOARD SWITCH	1-1 H=4.3[35304]
S 7605	432P066O70	KEY BOARD SWITCH	1-1 L=8.35 T[except 35304]
S 7605	432P100O10	KEY BOARD SWITCH	1-1 H=4.3[35304]
S 7606	432P066O70	KEY BOARD SWITCH	1-1 L=8.35 T[except 35304]
S 7606	432P100O10	KEY BOARD SWITCH	1-1 H=4.3[35304]
S 7608	432P066O70	KEY BOARD SWITCH	1-1 L=8.35 T[except 35304]
S 7608	432P100O10	KEY BOARD SWITCH	1-1 H=4.3[35304]
S 7609	431C092O10	SLIDE SWITCH	[35303]
S 7609	431C068O30	SLIDE SWITCH	2-3 NON-SHORT[35304]
S 7610	431C091O10	SLIDE SWITCH	[35303]

SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION
S 7610	431C067O10	SLIDE SWITCH	2-2 NON SHORT[35304]
		MISCELLANEOUS	
	338P030O30	CPM ASSY	[35304]
	641D758O10	WEDGE	ELASLEN NF-01[35304]
AG5000	224D019O40	AIR GAP	2KV[35303,35304]
F 501	283D035O70	FUSE	S2A
F 9A1	283D060O30	FUSE	S6.3A [31203,31203C,31303,31303C]
F 9010	283D060O30	FUSE	S6.3A[35303,35304]
J 201	440C272O20	PIN JACK BOARD	6P
J 202	449C121O20	SOCKET DIN MINI	YKF515503
J 601	449C081O70	SOCKET CRT	[31203,31203C,31303,31303C]
J 601	449C123O20	SOCKET CRT	[35303]
J 601	449C113O10	SOCKET CRT	[35304]
K 9A1	287P049O10	RELAY POWER	DG12D1-0(M) [31203,31203C,31303,31303C]
K 9A2	287P049O10	RELAY POWER	DG12D1-0(M) [31203,31203C,31303,31303C]
K 9010	287P049O30	RELAY POWER	DJ12D-0(M)-L[35303,35304]
PC552	268P058O10	PHOTO COUPLER	ON3131-R
PC9010	268P058O10	PHOTO COUPLER	ON3131-R[35303,35304]
PC9020	268P058O10	PHOTO COUPLER	ON3131-R[35303,35304]
RV9A1	265P100O10	VARISTOR	ERZV10D271 [31203,31203C,31303,31303C]
RV9010	265P100O10	VARISTOR	ERZV10D271[35303,35304]
SP391	480P646O50	SPEAKER	5W 8Ω [31203,31203C,31303,31303C]
SP391	480P646O60	SPEAKER	5W 16Ω[35303]
SP391	480P383O60	SPEAKER	15W 8Ω[35304]
SP392	480P646O50	SPEAKER	5W 8Ω [31203,31203C,31303,31303C]
SP392	480P646O60	SPEAKER	5W 16Ω[35303]
SP392	480P383O60	SPEAKER	15W 8Ω[35304]
SP393	480P400O20	SPEAKER	[35303]
SP394	480P400O20	SPEAKER	[35303]
* TU101	295P420O20	TUNER	ENG26102G
X 601	285P029O10	CRYSTAL RESONATOR	3.5795MHz[except 31303C]
X 601	285P029O50	CRYSTAL RESONATOR	3.5795MHz[31303C]
X 7A0	285P039O20	CRYSTAL RESONATOR	8.00MHz
X 7001	285P069O20	CRYSTAL RESONATOR	HC-49/U [31303,31303C,35303,35304]
Z 7600	939P296O60	PREAMP UNIT	HC-437ME[except 35304]
Z 7600	939P481O30	PREAMP UNIT	HC-477M[35304]
Z 9510	283P039O30	FUSE	SSFR 8A[35303,35304]
		PRINTED CIRCUIT BOARD ASSY'S	
*	930C822O15	AV PCB ASSY	[31203,31203C]
*	930C822O14	AV PCB ASSY	[31303,31303C]
*	930C822O12	AV PCB ASSY	[35303]
*	930C822O11	AV PCB ASSY	[35304]
*	930C589O15	CONTROL-2 PCB ASSY	[31203,31203C]
*	930C589O14	CONTROL-2 PCB ASSY	[31303,31303C]
*	930C590O12	CONTROL-3 PCB ASSY	[35303]
*	930C591O11	CONTROL-4 PCB ASSY	[35304]
*	920D596O08	MAIN PCB ASSY	920A412-15+[31203,31203C]
*	920D596O07	MAIN PCB ASSY	920A412-14+[31303,31303C]
*	920A412O12	MAIN PCB ASSY	[35303]
*	920A412O11	MAIN PCB ASSY	[35304]
*	930C812O01	PIP PCB ASSY	[31303,31303C,35303,35304]
*	930C805O15	POWER-SUB PCB ASSY	[31203,31203C]
*	930C805O14	POWER-SUB PCB ASSY	[31303,31303C]
*	930B667O12	POWER PCB ASSY	[35303]
*	930B667O11	POWER PCB ASSY	[35304]
*	930C810O15	VMCRT PCB ASSY	[31203,31203C]
*	930C810O14	VMCRT PCB ASSY	[31303,31303C]
*	930C810O12	VMCRT PCB ASSY	[35303]
*	930C810O11	VMCRT PCB ASSY	[35304]
		MECHANICAL PARTS	
	669D220O40	SCREW	3X12 46LA005
	669D221O40	SCREW	4X12 46LA005[except 35303]
	669D221O60	SCREW	4X16 46LA005[except 35304]
	669D221O30	SCREW	4X10 46LA005[35303]
	669D212O10	SCREW	3X12
IC501	669D220O30	SCREW	3X10 46LA005
IC502	669D220O30	SCREW	3X10 46LA005[35303,35304]
IC503	669D220O30	SCREW	3X10 46LA005[35303,35304]
IC953	669D220O30	SCREW	3X10 46LA005
IC954	669D220O30	SCREW	3X10 46LA005
IC9010	669D171O30	SCREW	M3X12[35303,35304]
T 551	669D220O30	SCREW	3X10 46LA005
		COSMETIC PARTS	
	242C957O40	AC POWER CORD	
	960D086O20	CABINET ASSY	[35304]
	752C045O40	COVER ASSY	[35303]
	752C045O30	BAFFLE BOARD ASSY	[35303]
	700C180O20	BACK COVER	[31203]
	700C180O30	BACK COVER	[31203C]
	700C179O90	BACK COVER	[31303]
	700C180O10	BACK COVER	[31303C]
	700C179O50	BACK COVER	[35303]
	700C164O70	BACK BOARD	[35304]
	701A457O90	FRONT CABINET ASSY	[31203,31303]
	701D100O90	FRONT CABINET ASSY	[31203C,31303C]
	701A492O80	FRONT CABINET ASSY	[35303]
	701A555O40	FRONT UNIT	[35304]
	641D173O10	CLIP	AC-POWER-CORD[35304]
	761B162O40	COVER CRT	[35304]
	752C075O30	DOOR	701A457-90(15) [31203,31203C,31303,31303C]
	752C075O10	DOOR	701A492-80(16)[35303]
	752C075O20	DOOR	701A555-40(13)[35304]
	761C352O10	DOOR CATCH	
	761A088O10	SPEAKER GRILLE	[35304]
	704B058O30	KNOB CONTROL	[35303]
	704C849O10	KNOB KEY BOARD	[35304]
	704B050O40	KNOB PUSH	[31203,31203C,31303,31303C]
	734D531O10	KNOB SLIDE	[35303]
	734D459O10	KNOB SLIDE	[35304]
	761A111O10	TERMINAL BOARD	

[31203] : CS-31203 [31203C] : CS-31203C [31303] : CS-31303 [31303C] : CS-31303C [35303] : CS-35303 [35304] : CK-35304

SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION
		PACKING PARTS AND ACCESSORY	
	803B650O10	PACKING CUSHION	[31203,31303]
	803A256O10	PACKING CUSHION	[35303]
	871C905O90	INSTRUCTION BOOK	[31203]
	871C932O30	INSTRUCTION BOOK	ENGLISH/FRENCH[31203C]
	871C906O00	INSTRUCTION BOOK	[31303,35303]
	871C932O40	INSTRUCTION BOOK	ENGLISH/FRENCH[31303C]
	871C906O20	INSTRUCTION BOOK	[35304]
	831C060O80	PACKING BAG	[35304]
	802B454O10	PACKING CASE	BOTTOM[35304]
	802B454O60	PACKING CASE	SLEEVE[35304]
	802A112O30	PACKING CASE	[31203]
	802A112O40	PACKING CASE	[31303]
	802A112O50	PACKING CASE	[35303]
	802B454O70	PACKING CASE	[35304]
	802B454O40	PACKING CASE	BACK[35304]
	831D191O30	PACKING BAG	266.7X381 [31203,31303,35303,35304]
	831D226O20	PACKING BAG	1500X1200[31203,31303]
	831D226O30	PACKING BAG	[35303]
	829D149O10	PACKING SHEET	1423X1016X3[35304]
	829D149O20	PACKING SHEET	1423X1016X.[35304]
*	290P035O30	REMOTE HAND UNIT	[31203,31203C]
*	290P035O50	REMOTE HAND UNIT	[31303,31303C,35303,35304]
	871B061O10	SAFETY TIP CARD	[31203C,31303C]
		OTHER CRITICAL COMPONENTS	
R 305	103P338O40	R-CARBON-25	1/4W 2.2Ω-J
R 306	103P338O40	R-CARBON-25	1/4W 2.2Ω-J
R 5300	109D031O10	R-COMPOSITION	1/2W 22K-M[35303,35304]
R 984	103P338O70	R-CARBON-25	1/4W 3.9Ω-J

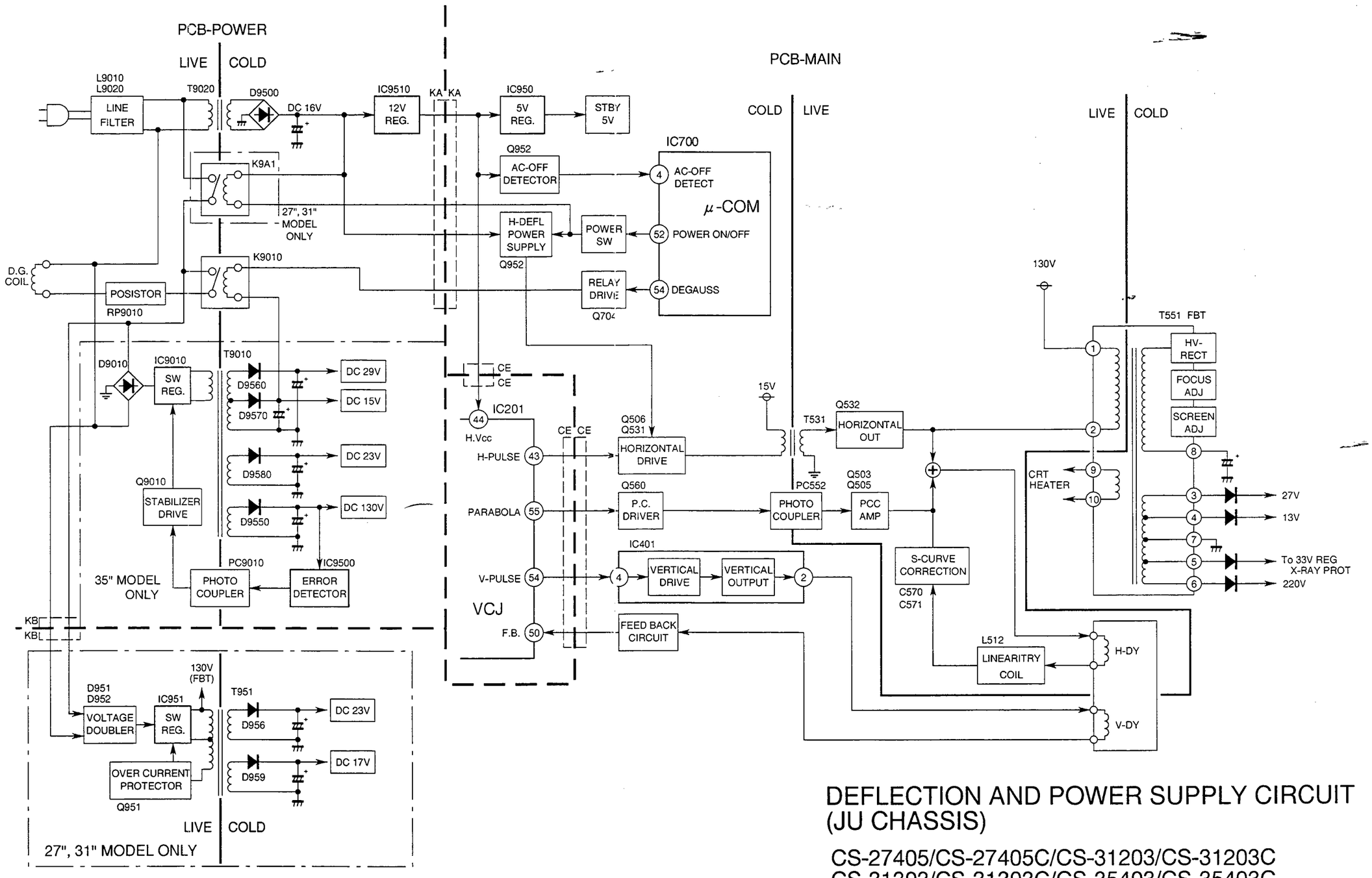
SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION



VIDEO/AUDIO CIRCUIT (JU CHASSIS)

CS-27405/CS-27405C/CS-31203/CS-31203C
CS-31303/CS-31303C/CS-35403/CS-35403C
CS-35303/CK-35304

(JU00601)



DEFLECTION AND POWER SUPPLY CIRCUIT (JU CHASSIS)

CS-27405/CS-27405C/CS-31203/CS-31203C
CS-31303/CS-31303C/CS-35403/CS-35403C
CS-35303/CK-35304

SCHEMATIC DIAGRAM

MODELS : CS-31203
CS-31203C
CS-31303
CS-31303C
CS-35303
CK-35304

• NOTE

1. DC voltages were measured from points indicated to the circuit ground with a high-Z voltmeter.
2. Waveforms were taken with standard colour bar signal.
3. TP6A, etc. show Test Points.
4. CAPACITORS

Value	Not indicated	PF, for numbers more than 1 μF, for numbers less than 1
Dielectric Strength	Not indicated :50V	
Tolerance	Not indicated ±±10%	No Tolerance is indicated for electrolytic capacitors and ±20%
	G=±2% J=±5% K=±10% M=±20%	P=+100% −0% Z=+80% −20% Q=+30% −10% T=+200% −0% C=±0.25PF D=±0.5PF F=±1PF G=±7PF
Sort	I Parts except for chips	Not indicated : Ceramic capacitor (MP) : Polyester capacitor (PP) : Polypropylene film capacitor (AL) : Alumnius electrolytic capacitor (TF) : Twin film capacitor (SC) : Semiconductor ceramic capacitor (MP) : Metalized paper (MPF) : Metalized plastic film capacitor (MP) : Metalized polyester capacitor (MFPP) : Polyester polypropylene film capacitor (SR) : Styrol capacitor (TAN or TANT) : Tantalum capacitor (BP or NP) : Electrolytic capacitor : Non polarized electrolytic capacitor
	II Chips	Not indicated : Ceramic capacitor chip (BP or NP) : Electrolytic capacitor : Non polarized electrolytic capacitor chip
Characteristic (only ceramic capacitor)	Not indicated : F or B(high dielectric percentage) CH,SL,etc. : Temperature compensating types	

5. Resistors

Value	Not indicated = Ω K = kΩ(1000Ω) M = MΩ(1000kΩ)	
Wattage	Parts except for chips	Not indicated = 1/4W or 1/6W
	Chips	Not indicated = 1/10W
Tolerance	Not indicated ±±5% D=±0.5% J=±5% F=±1% K=±10%	
Short	I Parts except for chips	Not indicated : Carbon resistor (S) : Fixed composition resistor (MG) : Metal oxide film resistor(type B) (CC) : Cemented resister (W) : Wire wound resister (M) : Metal film resister (MC) : Metal plate cement resister (ML) : Metal liner resister
	II Chip	Not indicated : Chip resistor

6. This is a basic schematic diagram. Some sets may be subject to modification according to engineering improvement.

SPECIFIC SYMBOL

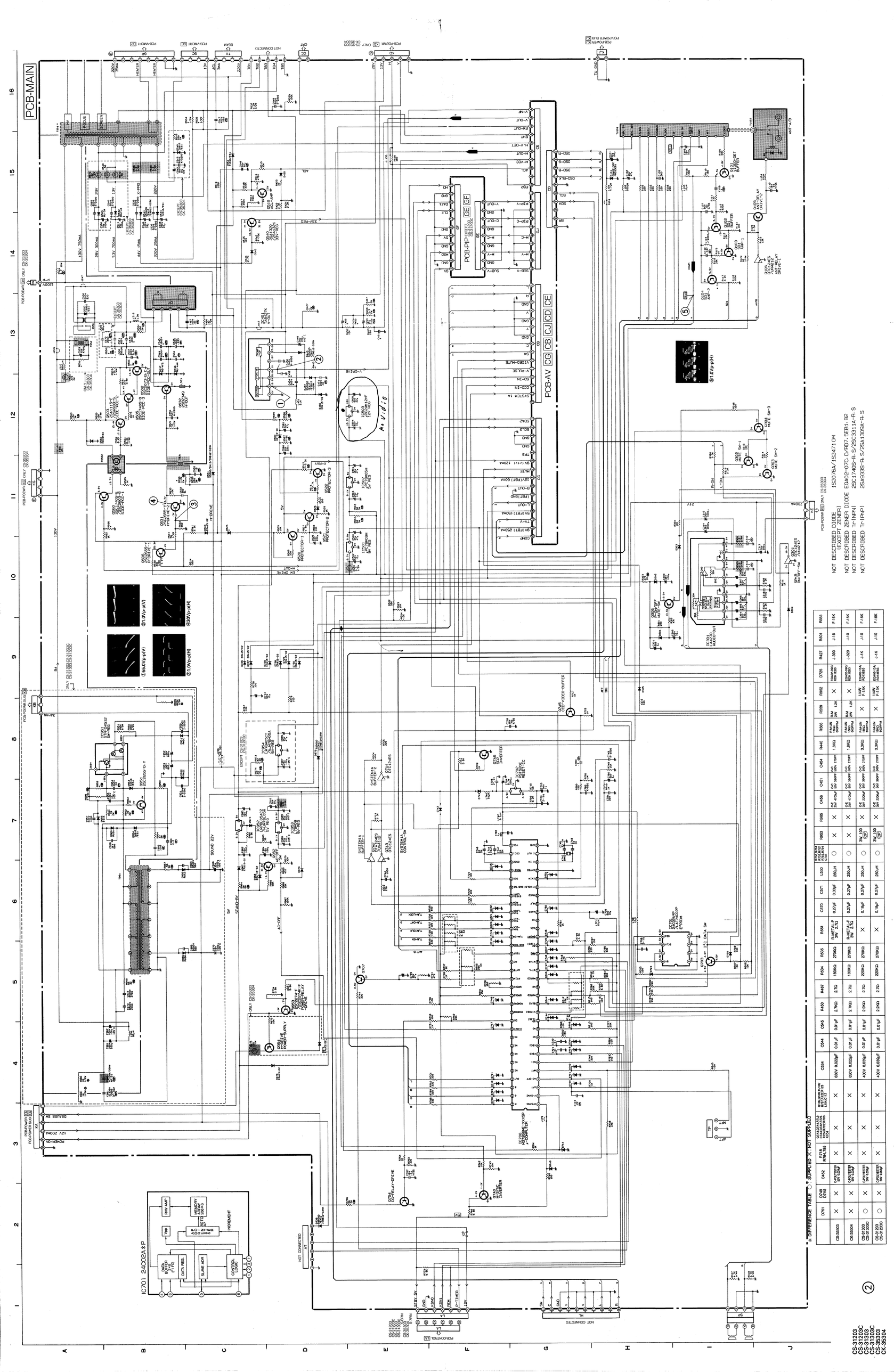
Zener Diode	Crystal unit
Varicap	Air Gap
Posistor	Part(resistor) attached on the copper-foil side of PCB
Thermistor	Ceramic filter
Fusible Resistor	

SHADED COMPONENTS HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY. BEFORE REPLACING ANY OF THESE COMPONENTS READ CAREFULLY THE PRODUCT SAFETY NOTICE IN THE SERVICE MANUAL. DON'T DEGRADE THE SAFETY OF THE RECEIVERS THROUGH IMPROPER SERVICING.

SERVICE MAN WARNING
X-RADIATION PRECAUTION
THIS PRODUCT INCLUDES CRITICAL ELECTRICAL AND MECHANICAL PARTS ESSENTIAL FOR X-RADIATION PROTECTION.
TO AVOID POSSIBLE EXPOSURE TO X-RADIATION TAKE X-RADIATION PROTECTIVE MEASURES FOR PERSONNEL DURING SERVICING.
SEE SERVICE INSTRUCTIONS FOR SPECIFIED REPLACEMENT PARTS AND SERVICE ADJUSTMENTS.

LES ELEMENTS CONSTITUTIFS HACHURES ONT DES CARACTERISTIQUES SPECIALES IMPORTANTES A LA SECURITE. AVANT DE REMPLACER L'UN OU L'AUTRE DE CES ELEMENTS, LIRE ATTENTIVEMENT LA NOTICE DE SECURITE D'APPAREIL DANS LE MANUEL DE SERVICE.
NE PAS NUIRE A LA SECURITE DES RECEPTEURS PAR SERVICE NON APPROPRIE.

AVERTISSEMENT AU DEPANNEUR
PRECAUTIONS CONTRE LA RADIATION AUX RAYONS X LE PRESENT APPAREIL COMPORTE DES PIECES IMPORTANTES ELECTROMECANIQUES POUR LA PROTECTION CONTRE LA RADIATION AUX RAYONS X. POUR EVITER TOUTE EXPOSITION EVENTUELLE A LA RADIATION AUX RAYONS X, PRENDRE LES MESURES DE PROTECTION AU COURS DU DEPANNAGE. VOIR LES INSTRUCTIONS D'ENTRETIEN POUR LES PIECES DE REMPLACEMENT SPECIFIEES ET LES REGLAGES D'ENTRETIEN.



	D751	D749 D750	C452	R718 JUMPER
CS-35303	X	X	CONVERTER NW 1000µF	X
CX-35304	X	X	CONVERTER NW 1000µF	X
CS-31203 CS-31203C	○	X	CONVERTER NW 1000µF	X
CS-31303 CS-31303C	X	X	CONVERTER NW 1000µF	X

	C534	C544	C545	R450	R457	R534	R535	R551	C570	C571	L530	R553	R556	C456	C451	C454	R440	R559	R552	D725	R427	R501	R555
CS-35303	630V 0.022µF	0.01µF	0.01µF	2.7KΩ	2.7Ω	180KΩ	270KΩ	RA-MET/ALF 3W 27Ω	0.27µF	0.27µF	250µH	○	X	5W 100Ω	DC 35V 470µF	DC 50V 330nF	1.8KΩ	RA-MET/ALF 600PW	RA-MET/ALF 600PW	ERA8AEB1003 ERA8AEB103	J-39Ω	J-15	F-15K
CX-35304	630V 0.022µF	0.01µF	0.01µF	2.7KΩ	2.7Ω	180KΩ	270KΩ	RA-MET/ALF 3W 27Ω	0.27µF	0.27µF	250µH	○	X	5W 100Ω	DC 35V 470µF	DC 50V 330nF	1.8KΩ	RA-MET/ALF 600PW	RA-MET/ALF 600PW	ERA8AEB1003 ERA8AEB103	J-82Ω	J-10	F-15K
CS-31203 CS-31203C	400V 0.039µF	0.01µF	0.01µF	2.2KΩ	2.7Ω	220KΩ	270KΩ	X	0.18µF	0.27µF	250µH	○	X	5W 100Ω	DC 25V 2200µF	DC 50V 330nF	3.3KΩ	RA-MET/ALF 600PW	RA-MET/ALF 600PW	ERA8AEB1003 ERA8AEB103	J-1K	J-10	F-15K
CS-31303 CS-31303C	400V 0.039µF	0.01µF	0.01µF	2.2KΩ	2.7Ω	220KΩ	270KΩ	X	0.18µF	0.27µF	250µH	○	X	5W 100Ω	DC 25V 2200µF	DC 50V 330nF	3.3KΩ	RA-MET/ALF 600PW	RA-MET/ALF 600PW	ERA8AEB1003 ERA8AEB103	J-1K	J-10	F-15K

CS-31203
CS-31203C
CS-31303
CS-31303C
CS-35303
CX-35304

IC3A0 μPC1852

IC202 CXA1545AS

IC201 VCJ AN5306NFBS

IC3A0 μPC1852 MCS

IC302 TA8776N CONTROL

IC202 CXA1545AS AV-SW

Q511 SCP KILLER

Q206 BLANKING

Q3A0

Q3A1

DL202 COMB-FILTER

DSA1 EHT-DRIVE

Q202 SYNC-SEP

Q208 Y-AMP-2

Q207 Y-AMP-1

Q203 Y BUFFER

Q602 C-AMP-2

Q601 C-AMP-1

Q201 DL BUFFER

DL201

Q204 2SK656 SVM OFF

Q312 MUTE-R

Q313 MUTE-L

Q311 P-ON/OFF MUTE

Q211 2SC2274-F VIDEO-OUT

Q212 SD-DET-1

Q213 SD-DET-2

J202 S-VIDEO(IN)

J203

J201 EXT-1(IN) EXT-2(IN) OUT

⑦3.0Vp-p(H)

⑧3.0Vp-p(H)

⑥0.4Vp-p(H)

PCB-VMCRT GD

PCB-VMCRT GA

PCB-MAIN CB

PCB-MAIN CC

PCB-MAIN CE

PCB-MAIN CJ

PCB-MAIN CG

※DIFFERENCE TABLE ○:SUPPLIED ×:NOT SUPPLIED

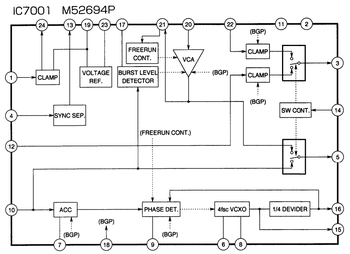
	C223,C224,C373,C374,D203 D208,R233,R235,R236,R237 R363,R364,R375,R376,J203	C225,C226,C227,C375,C376 C631,D204,D205,D206,R238 R239,R365,R366	R243 C236	RJ11 RJ12
CS-31303 CS-31303C CS-35303 CK-35403	×	×	○	×
CS-31203 CS-31203C	×	×	×	○

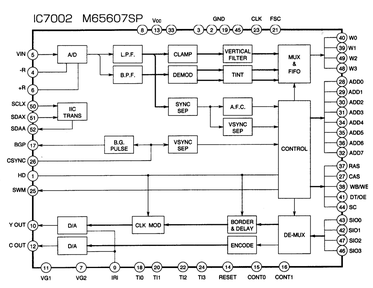
NOT DESCRIBED Tr(NPN) 2SC2412K-R,S
NOT DESCRIBED Tr(PNP) 2SA1037K-R,S
NOT DESCRIBED DIODE (EXCEPT ZENER) 1S2076A/1S2471
NOT DESCRIBED ZENER DIODE EGA02-07CD/RD7.5EB1,B2

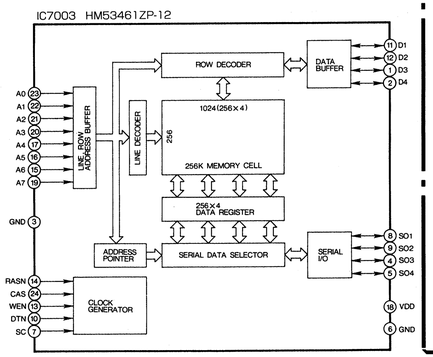
CS-31203
CS-31203C
CS-31303
CS-31303C
CS-35303
CK-35304

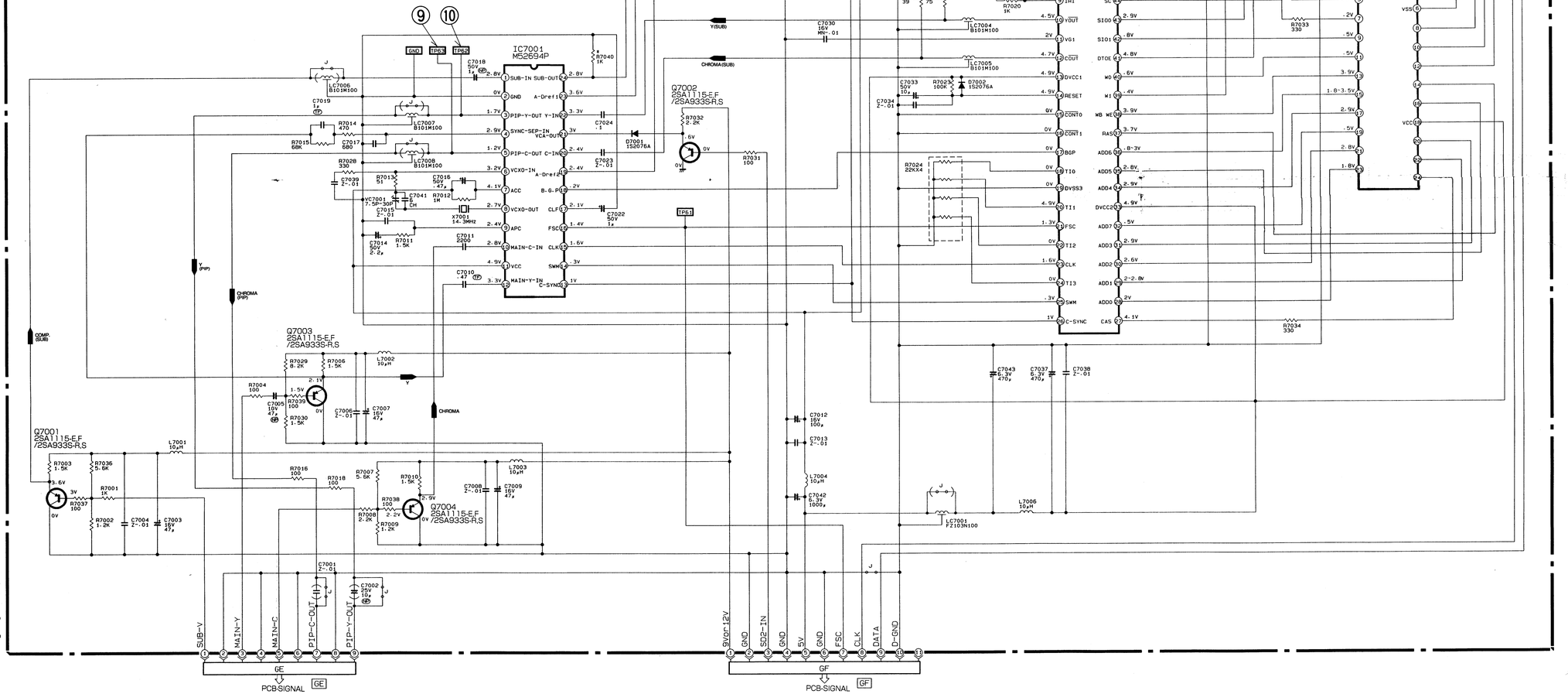
PCB-PIP

* NOT USED FOR CS-31203,CS-31203C



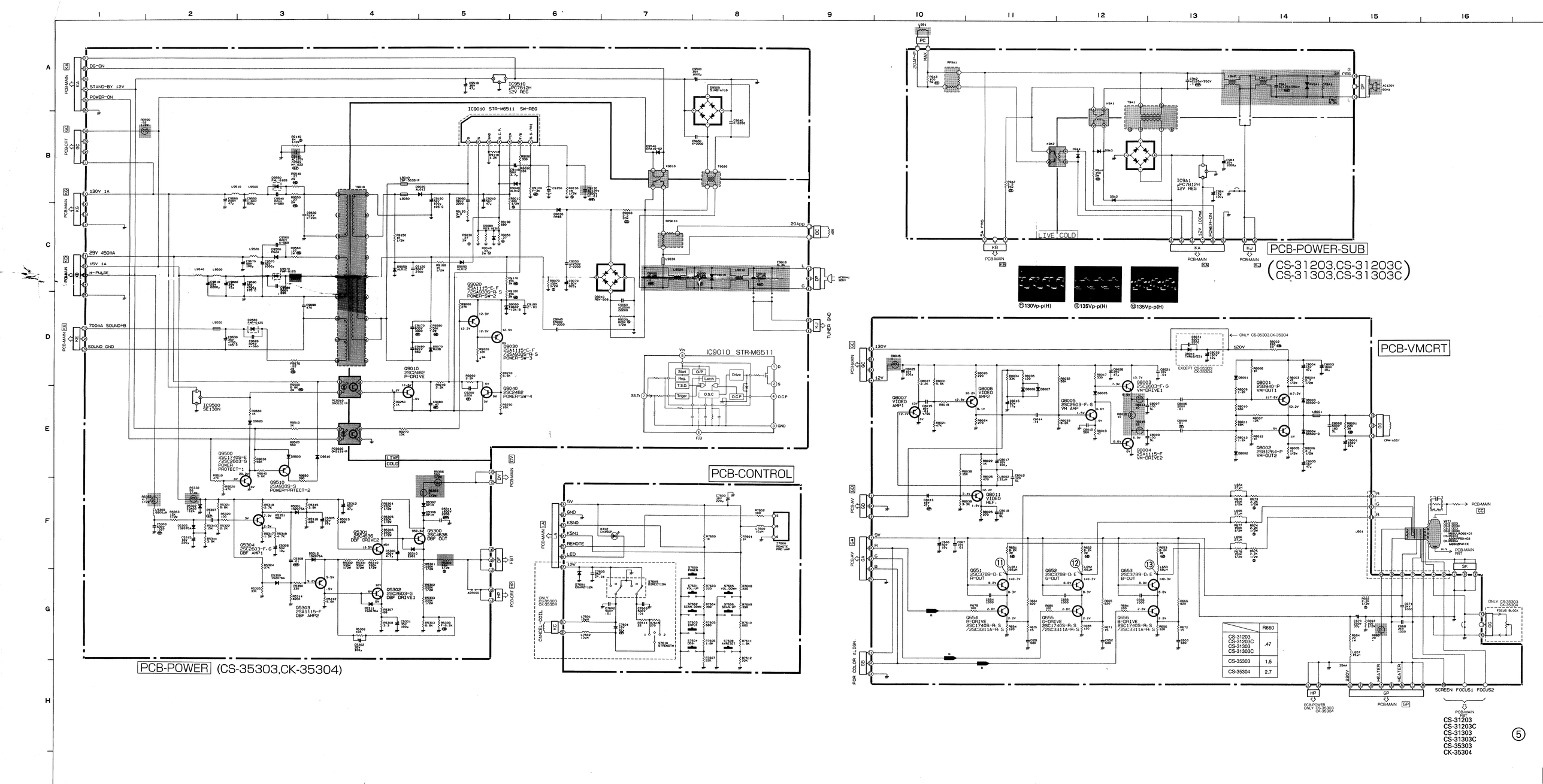




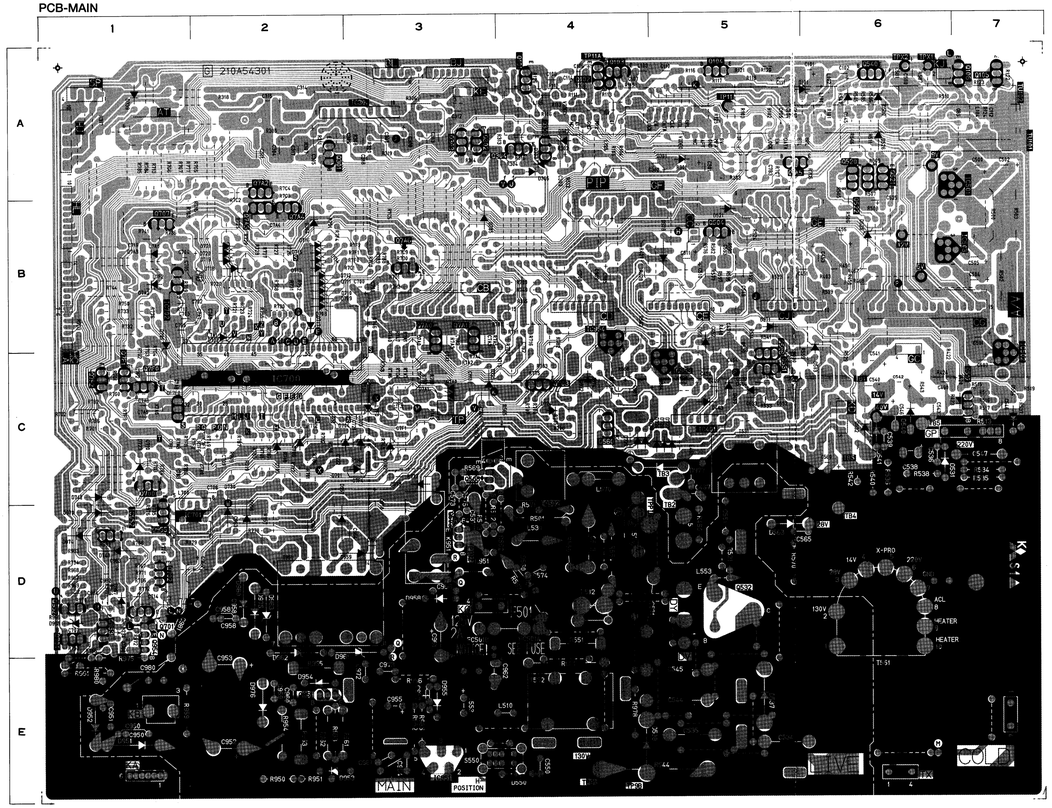


* :SOLDER SIDE PARTS

CS-31203
CS-31203C
CS-31303
CS-31303C
CS-35303
CK-35304


PCB-POWER (CS-35303,CK-35304)
PCB-CONTROL
PCB-POWER-SUB
(CS-31203,CS-31203C
CS-31303,CS-31303C)
PCB-VMCRT
IC9010 STR-M6511
IC9010 STR-M6511
DG-ON
STAND-BY 12V
POWER-ON
130V 1A
29V 450mA
15V 1A
H-PULSE
700mA SOUND+B
SOUND GND
20App
TUNER GND
LIVE
COLD
ONLY CS-35303,CK-35304
EXCEPT CS-35303
CK-35304
CRT-ASSY
FOCUS BLOCK
SCREEN FOCUS1 FOCUS2
CS-31203
CS-31203C
CS-31303
CS-31303C
CS-35303
CK-35304
⑤

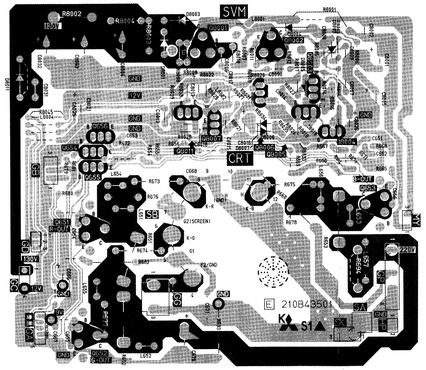
PCB-MAIN



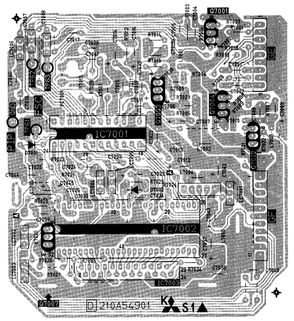
PCB-MAIN

SYMBOL NO.	ADDRESS
CF7F0	C-1
D101	A-5
D301	A-5
D302	A-4
D303	A-4
D304	B-2
D305	B-3
D306	A-4
D420	C-7
D443	C-5
D457	C-5
D466	C-5
D503	C-6
D521	B-5
D525	B-6
D526	A-6
D531	C-6
D532	C-6
D537	E-5
D538	E-5
D540	C-6
D541	C-6
D545	A-6
D550	E-4
D551	B-5
D554	C-7
D560	D-4
D563	D-5
D580	A-6
D700	C-3
D701	C-2
D702	C-3
D703	C-3
D704	C-2
D705	B-1
D706	C-2
D707	C-2
D708	B-2
D709	B-3
D710	B-3
D711	B-3
D712	B-3
D713	B-2
D714	B-2
D715	B-2
D716	B-2
D717	B-2
D718	B-2
D719	B-2
D720	B-2
D721	B-2
D722	B-2
D723	C-1
D724	C-4
D725	C-3
D726	C-5
D727	C-5
D728	C-5
D729	C-4
D730	C-2
D738	C-5
D739	A-1
D742	C-1
D743	D-1
D7A0	C-3
D7A1	C-3
D7A2	B-1
D7A3	B-1
D951	E-1
D952	E-1
D953	E-3
D954	E-2
D955	E-3
D956	D-2
D957	C-2
D958	D-3
D959	D-3
D960	D-2
D961	E-2
D962	E-2
D963	D-2
D967	D-1
D968	D-1
D970	D-1
D971	B-5
D972	C-4
D973	C-3
D974	D-1
D975	D-2
D976	E-2
D977	C-5
D978	B-5
F501	D-4
IC301	A-3
IC401	C-5
IC501	A-7
IC502	C-7
IC503	B-7
IC700	C-2
IC701	D-1
IC702	B-1
IC951	E-3
IC952	D-1
IC953	C-5
IC954	B-4
K951	D-3
L101	A-6
L102	A-6
L103	A-4
L104	A-7
L105	A-4
L106	A-4
L451	C-5
L510	E-4
L512	D-4
L530	D-4
L553	D-5
L570	C-4
L700	C-1
L7A0	B-1
L7A1	B-2
L7A2	B-2
L7F0	C-3
L7F1	C-2
L7F2	B-1
L7F3	C-3
L951	D-3
PC552	C-3
Q101	A-4
Q102	A-4
Q103	A-4
Q104	A-5
Q105	A-7
Q106	A-7
Q301	A-2
Q302	A-3
Q303	A-3
Q304	A-4
Q306	A-4
Q502	D-4
Q503	D-3
Q504	B-5
Q505	C-3
Q506	C-5
Q510	C-7
Q520	A-6
Q521	A-6
Q522	B-6
Q531	C-5
Q532	D-5
Q540	A-6
Q560	C-4
Q700	C-1
Q701	D-1
Q702	D-1
Q703	C-4
Q704	D-1
Q707	B-1
Q7A0	B-3
Q7A1	B-3
Q7A2	A-2
Q7A3	B-2
Q7A4	B-2
Q7A5	A-5
Q7A6	B-3
Q7F0	C-1
Q7F1	C-1
Q7F2	C-1
Q951	E-2
Q952	D-1
Q953	D-1
Q954	D-1
Q955	D-1
S550	E-3
T531	C-5
T551	E-6
T552	E-4
T951	D-2
TU101	A-7
TU102	A-7
X7A0	C-1

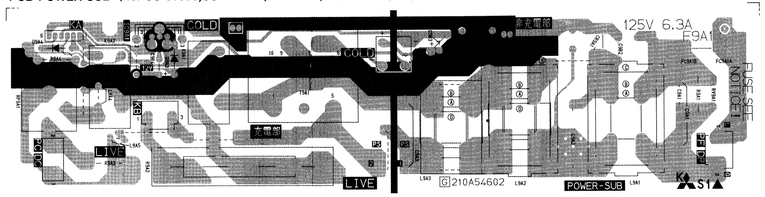
PCB-VMCRT



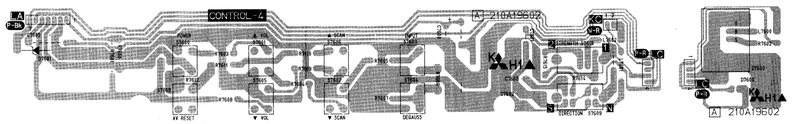
PCB-PIP (for CS-35303,CK-35304 CS-31303,CS-31303C)



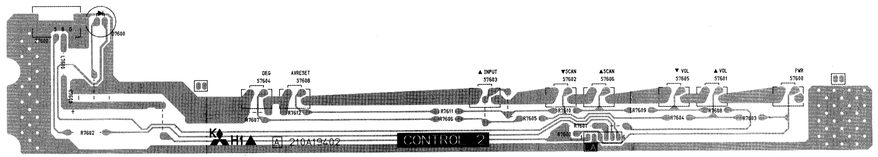
PCB-POWER-SUB (for CS-31303,CS-31303C,CS-31203,CS-31203C)



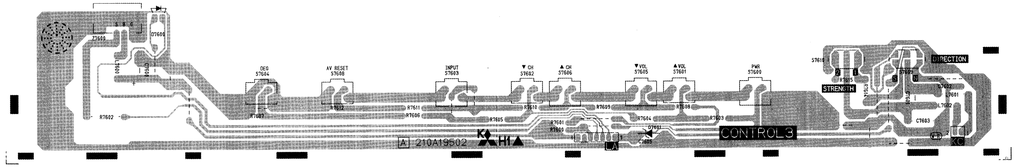
PCB-CONTROL-4 (CK-35304 only)



PCB-CONTROL-2 (for CS-31303,CS-31303C,CS-31203,CS-31203C)

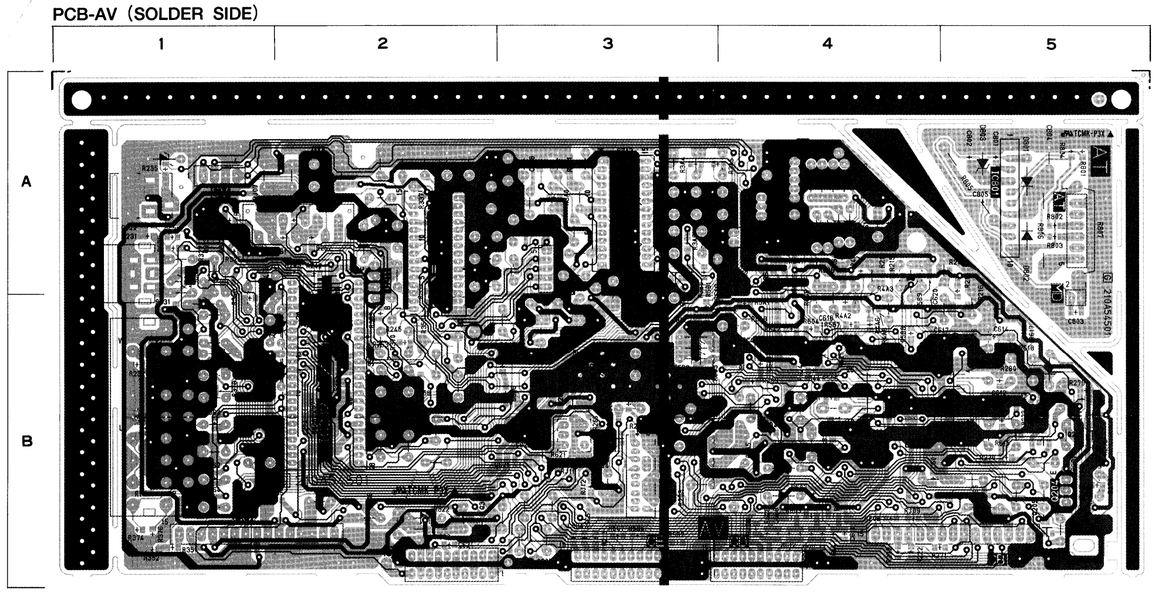


PCB-CONTROL-3 (CS-35303 only)

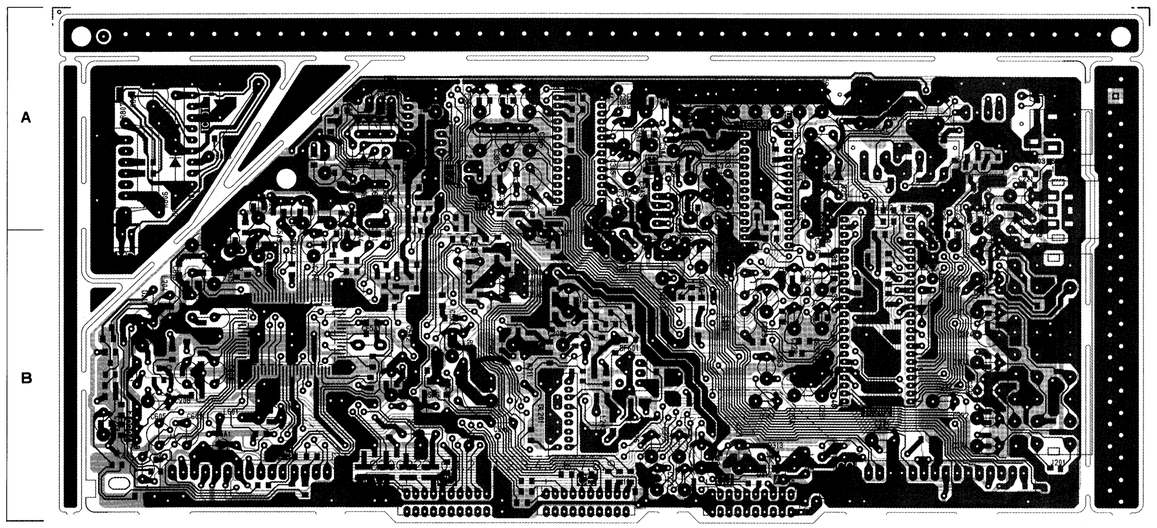


CS-31203
CS-31203C
CS-31303
CS-31303C
CS-35303
CK-35304

PCB-AV (SOLDER SIDE)



PCB-AV (COMPONENT SIDE)



PCB-AV (SOLDER SIDE)

SYMBOL NO.	ADDRESS
C205	B-3
C209	B-3
C222	A-1
C224	B-2
C227	B-2
C332	A-2
C352	A-2
C353	B-2
C356	B-3
C358	B-3
C3A8	A-3
C5A1	B-4
C5A8	B-3
C5B3	B-3
C5B4	B-3
C601	B-4
C608	B-4
C609	B-4
C610	B-4
C611	B-4
C612	B-5
C614	B-5
C616	B-5
C617	B-5
C618	B-4
C620	B-5
C621	B-3
C622	A-4
C623	B-3
C624	B-2
C630	A-1
C631	B-2
C640	B-4
C801	A-5
C802	A-5
C803	B-5
C805	A-5
D801	A-5
D802	A-5
D803	A-5
IC201	B-4
IC202	B-2
IC302	A-2
IC3A0	A-3
IC801	A-5
Q201	B-3
Q202	B-3
Q203	B-3
Q204	B-5
Q205	B-5
Q206	B-5
Q207	B-3
Q208	B-3
Q211	A-2
Q212	B-5
Q213	B-5
Q311	B-2

SYMBOL NO.	ADDRESS
Q312	A-1
Q313	A-1
Q3A0	B-3
Q3A1	A-3
Q5A1	B-4
Q601	A-4
Q602	B-4
Q611	A-4
R201	B-3
R202	B-3
R203	B-3
R204	B-3
R205	B-3
R206	B-4
R207	B-3
R208	B-3
R209	B-3
R210	B-3
R212	B-3
R213	B-3
R214	A-4
R215	A-4
R216	A-5
R217	A-5
R218	A-5
R221	A-4
R222	B-4
R223	B-5
R231	A-1
R232	B-1
R233	B-1
R234	B-1
R235	A-1
R236	B-2
R237	B-2
R238	B-2
R239	B-2
R241	A-2
R242	A-2
R243	A-2
R245	B-2
R247	A-2
R252	A-2
R253	B-2
R254	B-2
R255	B-2
R256	B-2
R261	A-2
R262	A-1
R263	B-3
R264	B-3
R265	B-3
R266	B-3
R267	B-3
R268	B-3
R269	B-3
R270	B-5
R271	B-5
R272	B-4

SYMBOL NO.	ADDRESS
R273	B-5
R274	B-5
R275	B-5
R276	B-5
R277	B-5
R278	B-5
R279	B-5
R280	B-5
R281	B-5
R322	B-2
R323	B-2
R324	A-1
R325	A-1
R326	A-1
R327	A-1
R331	A-3
R332	A-3
R333	A-3
R334	B-2
R337	A-2
R338	B-2
R341	B-2
R347	B-3
R351	B-1
R352	B-1
R353	B-2
R354	A-2
R355	B-1
R361	B-1
R362	B-1
R363	B-1
R364	B-1
R365	B-2
R366	B-2
R367	B-1
R368	B-1
R369	B-2
R370	B-2
R373	B-1
R374	B-1
R375	B-1
R376	B-1
R377	B-1
R378	B-1
R3A0	A-3
R3A1	A-3
R3A2	A-3
R3A3	A-3
R3A4	A-3
R3A5	A-4
R3A6	A-3
R3A7	A-3
R3A8	B-3
R3A9	A-3
R3B0	A-3
R3B1	A-3
R3B2	A-3
R3B3	A-3
R4A1	B-4
R4A2	B-4

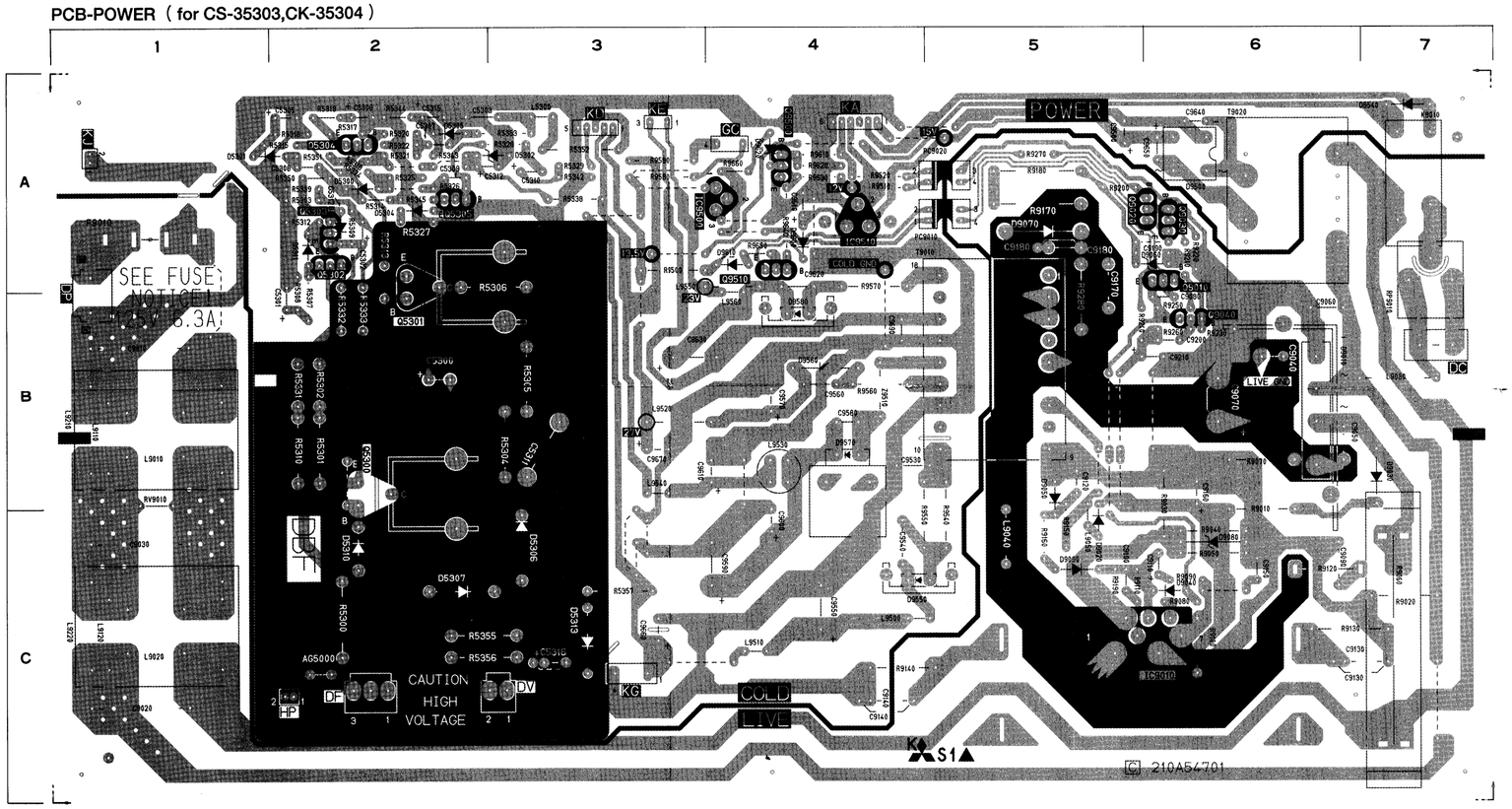
SYMBOL NO.	ADDRESS
R4A3	A-4
R4A4	B-3
R4A5	B-3
R4A6	B-4
R4A7	A-4
R4A8	B-4
R5A1	B-4
R5A2	B-5
R5A3	B-4
R5A4	B-4
R5A5	B-4
R5A7	B-4
R5A8	B-4
R5A9	A-4
R5B1	A-3
R5B2	B-3
R5B3	B-5
R5B4	B-4
R5B5	B-5
R5B6	B-3
R5B7	B-4
R5B8	B-4
R5B9	B-4
R5C1	B-4
R5C2	B-3
R5C3	B-3
R5C4	B-4
R5C5	B-3
R5C6	B-4
R5C7	B-3
R601	A-4
R602	A-4
R603	A-4
R604	B-4
R605	B-4
R606	A-4
R607	B-4
R608	B-4
R609	B-4
R610	B-4
R611	B-4
R612	B-4
R613	B-4
R614	B-4
R615	B-5
R616	B-5
R617	B-5
R618	B-5
R621	B-3
R623	B-3
R624	B-4
R625	B-4
R631	B-1
R633	A-2
R634	B-2
R635	A-1
R636	A-1
R640	A-4
R641	A-4
R642	B-4

SYMBOL NO.	ADDRESS
R643	A-4
R644	B-4
R648	A-4
R649	A-4
R801	A-5
R802	A-5
R803	A-5
R804	A-5
RJ01	B-5
RJ02	A-4
RJ03	B-4
RJ04	A-3
RJ05	A-3
RJ06	B-2
RJ07	A-1
RJ08	B-4
RJ09	B-4
RJ11	B-3
RJ12	B-3

PCB-AV (COMPONENT SIDE)

SYMBOL NO.	ADDRESS
BF601	B-3
CF5A1	B-2
D201	B-5
D202	A-5
D203	B-5
D204	B-5
D205	B-5
D206	B-5
D207	A-4
D208	A-5
D211	B-1
D312	B-4
D313	B-4
D5A1	B-1
D5A2	B-2
D5A3	B-3
D5A4	B-3
D5A5	B-3
D5A6	B-2
D601	A-5
D602	A-2
D603	A-2
D604	A-2
D605	A-2
D606	A-2
D607	A-2
D608	A-2
D609	A-2
D612	B-2
D801	A-1
D802	A-1
D803	A-1
DL201	B-3
DL202	A-4
IC202	B-4
IC302	A-4
IC3A0	A-3
IC801	A-1
J201	B-5
J202	A-5
J203	A-5
L201	B-4
L202	A-4
L203	B-3
L204	B-1
L601	B-1
L602	B-4
Q204	B-1
Q211	A-4
X601	B-1

PCB-POWER (for CS-35303,CK-35304)



PCB-POWER

SYMBOL NO.	ADDRESS
AG5000	C-2
D5300	A-2
D5301	A-1
D5302	A-3
D5304	A-2
D5305	A-2
D5306	C-3
D5307	C-2
D5310	C-2
D5311	A-2
D5312	A-2
D5313	C-3
D9010	B-6
D9020	C-5
D9030	B-7
D9040	C-6
D9050	B-5
D9060	A-6
D9070	A-5
D9080	C-6
D9090	C-5
D9500	A-6
D9540	A-7
D9550	C-4
D9560	B-4
D9570	B-4
D9580	B-4
D9600	A-4
D9610	A-4
D9620	A-4
F9010	A-1
IC9010	C-6
IC9500	A-3
IC9510	A-4
K9010	A-7
L5300	A-3
L9010	B-1
L9020	C-1
L9030	B-7
L9040	C-5
L9050	C-5
L9110	B-1
L9210	B-1
L9210	C-1
L9220	C-1
L9500	C-4
L9510	C-4
L9520	B-3
L9530	B-4
L9540	B-3
L9550	A-3
L9560	B-4
PC9010	A-5
PC9020	A-5

SYMBOL NO.	ADDRESS
Q5300	B-2
Q5301	B-2
Q5302	A-2
Q5303	A-2
Q5304	A-2
Q5305	A-2
Q9010	A-6
Q9020	A-5
Q9030	A-6
Q9040	B-6
Q9500	A-4
Q9510	A-4
RP9010	B-7
RV9010	B-1
T9010	A-5
T9020	A-6
Z9510	B-4

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